VŠB — TECHNICAL UNIVERSITY OF OSTRAVA

FACULTY OF ECONOMICS

DEPARTMENT OF FINANCE

# Finanční Analýza společnosti Armatury Group

# Financial Analysis of the Armatury Group

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# Bachelor Thesis Assignment

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1. Introduction
2. Description of Financial Analysis
3. Characteristics of ARMATURY Group
4. Financial Analysis of ARMATURY Group
5. Conclusion

Bibliography
List of Abbreviations
Declaration of Utilisation of Results from the Bachelor Thesis
List of Annexes
Annexes

References:

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"I hereby declare that I have elaborated the entire thesis including annexes myself."

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## *Contents*

# 1.Introduction

The primary goal in financial analysis is the dissemination of financial statements that accurately measure the profitability and financial condition of a company. There are some sources that provide considerable financial information. For example, financial data (offered by balance sheet, income statement and cash flow statement), market data (involving prices of securities, industry statistics), economic data (involving GDP, PPI, CPI). To assess the company's present and future financial position that means the financial health of this selected company is the dominating aim. Financial analysis is usually executed by professionals who prepare reports that are handed to top managers regraded as foundation of decision-making. It's a crucial approach to evaluate company's operations, expenses management, credit policy, creditworthiness, etc.

Methods of financial analysis can be divided into four groups: common-size analysis (horizontal common-size analysis, vertical common-size analysis); financial ratio analysis (involving profitability ratios, liquidity ratios, solvency ratios, activity ratios); pyramidal decomposition and influence quantification; credit methods. In this bachelor thesis, common-size analysis, financial ratio analysis and Dupont analysis are used.

The aim of this bachelor thesis is to analyze the financial situation of Armatury Group during the period from 2012 to 2016.

The thesis is divided into 5 chapters. The first chapter is introduction of the thesis. In chapter 2, illustrating financial analysis methodologies including financial statements, common-size analysis and financial ratio analysis is the main purpose. Chapter 3 is characteristics of the Armatury Group. The thesis introduces the Armatury Group from 4 aspects: history of the Armatury Group, management layer of the Armatury Group, products and services of the Armatury Group and strengths of the Armatury Group. In chapter 4, methods of financial analysis that mentioned are applied to the Armatury Group to assess its performance. In chapter 5, we provide our suggestions and draw conclusions for the Armatury Group.

# 2.Description of Financial Analysis

This chapter is the description of financial analysis procedure. Methods of financial analysis that are used in this thesis are common-size analysis, financial ratio analysis and DuPont analysis. Via financial analysis, it enables top managers to assess company's previous performance and assist them make better decisions to promote company's performance next operation cycle. Common-size analysis is analysis of data provided by financial statements and its transformations over time, which aims to find the tendency and major differences during selected period. Financial ratio analysis is the mean that compares financial data in the form of financial ratios and assesses the financial position of company.

## 2.1 Financial Statements

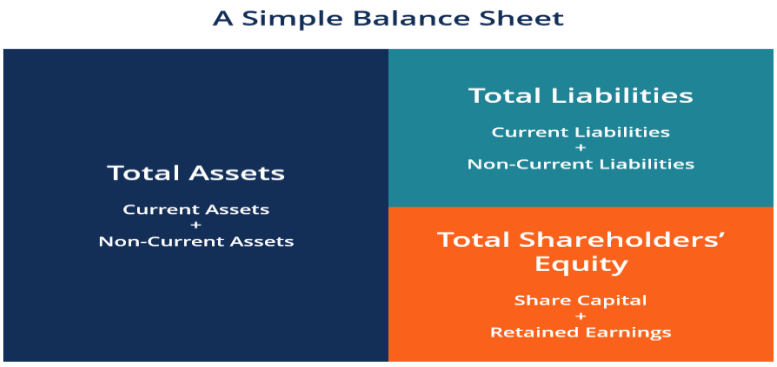
There are three basic types of financial statements summarizing information about a company, which respectively are balance sheet, income statement (profit/loss statement) and cash flow statement.

### 2.1.1 Balance Sheet

The balance sheet (also referred to as statement of financial position) summarizes the information about what the company owns (its assets), the value of these assets and mix of capital used for financing these assets (how these assets are financed). The balance sheet has two sides: the left side points out the assets; the right side indicates both equity and liabilities. The main principle of balance sheet is derived from an accounting equation:

$$total\ assets = total\ equity + total\ liabilities. \qquad (2.1)$$

Figure 2.1 The framework of balance sheet




Source: https://corporatefinanceinstitute.com/resources/knowledge/accounting/balance-sheet/

Assets are generated either by purchasing (investing activities), business activities (operating activities) or financing activities. Moreover, assets have four characteristics:

1.Assets should be taken in account to be expected to generate cash flows and bring economic benefits. If not, it can't be recognized as an enterprise's asset.

2.Assets are sources that are owned or controlled by the enterprise. It certifies that there exist two circumstances. One is that the enterprise has the ownership of the assets. Another is that although the assets are not owned by the enterprise, the enterprise controls the assets and can obtain economic benefits from these assets.

3.Assets were formed by transaction and events in the past. Only past transactions and events allows assets to come into being. This means that transactions and events in the future can't make up assets.

4.Assets must have the ability to be measured in currency. It's not enough for assets to just have values in mind. Solely when assets can be judged by certain amount of currency, they can apply for measuring the performance of the company.

Viewed from the angle of liquidity (ability of assets to turnover and being converted into cash), assets can be divided into two groups: fixed assets and current assets. Fixed assets (also referred to as non-current assets or long-term assets) include assets used by a company over a period longer than one year. They can be divided into: tangible assets (equipment, land, building, etc.); intangible assets (patents, goodwill, trademark, etc.); financial investments (investments in

securities and assets of other firms –shares, bonds, etc.). Current assets are short-term assets which can be divided into: accounts receivable (represent money owed the firm by individuals or by other firms on the sale of products (goods) on credit.); inventories (raw materials, goods for sale held by a firm for eventual sale, etc.); cash and cash equivalents (short-term tradeable securities). Main difference between fixed assets and current assets is whether exist high liquidity or not. More importantly, principal trait of current assets is that they can be converted into cash quickly without diminishing prices.

Equity and liabilities are mix of capital for financing of company´s assets. Equity consists of investment of shareholders (capital belonging to the owners or shareholders of the company) and by company´s profit (retained earnings). Equity can be divided into: common and preferred shares, share premium (paid-in capital) and retained earnings.

In addition, liability (debt) is the source of capital provided by creditors. In other words, liabilities represent money that company has borrowed and must be repaid at limited and predetermined time. According to the length of borrowing period, liabilities can be separated into two groups: short-term liabilities and long-term liabilities. Short-term liabilities (also referred to current liabilities) are borrowed money that must be repaid within one year, mainly include accounts payable (credit extended by suppliers to a company when it purchases inventories), accrued expenses (short-term liabilities but not yet paid), short-term notes (money borrowed from a bank payable within 12 months), etc. Long-term liabilities include money that has been borrowed for longer than one year, such as long-term bank loan and issued bonds.

To conclude, the balance sheet is a snapshot, representing the state of a company's finances at a moment in time. However, it cannot give a sense of the trends that are playing out over a longer period. For this reason, the balance sheet should be compared with those of previous periods (in this thesis, we will analyze at least 5 years). It should also be compared with those of other businesses in the same industry (usually referred to peer group analysis), since different industries have unique approaches to financing.

A number of ratios can be derived from the balance sheet, helping investors get a sense of how healthy a company is. These include the debt-to-equity ratio and the equity-to-asset ratio,

combining with many others. As following contents, the income statement and statement of cash flows also provide valuable information for evaluating a company's positions, importantly, these contexts are able to reflect back to the balance sheet, which certifies that those statements are an entire source of a company.

### 2.1.2 Income statement

Income statement (Profit and loss statement) reflects the operating results of a company in a certain accounting period (usually a year). It is the financial records of the company's operating performance over a period, which reflects the sales income, the cost of sales and taxes. Financial performance is assessed by giving a summary of how the business incurs its revenues and expenses through both operating and non-operating activities. It also shows the net profit or loss incurred over a specific accounting period. The results of the report reflect whether the company achieves the profits or losses. Therefore, income statement is a dynamic report.

At present, let us reveal the process of income statement step by step. Firstly, the difference between sales and cost of goods sold is gross profit. Subsequently, deducting administrative and general costs from gross profit is earnings before interests and taxes or operating income (referred to EBIT). Then, the difference between operating income and interest costs that is net income (also EAT). Afterwards, the company can distribute the net income to their shareholders, if there are residual net income, the company can make reinvestment.

We can see the example of structure of income statement as the following figure.

Figure 2.2 An example of income statement

**Example Corporation**
**Income Statement**
**For the year ended December 31, 2017**

| | |
|---|---|
| Sales (all on credit) | $500,000 |
| Cost of goods sold | 380,000 |
| Gross profit | 120,000 |
| Operating expenses | |
| Selling expenses | 35,000 |
| Administrative expenses | 45,000 |
| Total operating expenses | 80,000 |
| Operating income | 40,000 |
| Interest expense | 12,000 |
| Income before taxes | 28,000 |
| Income tax expense | 5,000 |
| Net income after taxes | $ 23,000 |
| Earnings per share (based on 100,000 shares outstanding) | $ 0.23 |

Source: https://www.accountingcoach.com/financial-ratios/explanation/3

What should be mentioned is that unlike the balance sheet, which covers one moment in time, the income statement offers performance information about a time period. It begins with sales (usually referred to revenue) and works down to net income and earnings per share (EPS).

The income statement is divided into two parts: operating and non-operating. The operating portion of the income statement discloses information about revenues and costs that are a direct indication of daily business operations. For instance, if a business manufactures construction equipment, it should earn money through the sale and/or production of construction equipment. Whereas in contrast, the non-operating section reveals revenue and cost information about activities that are indirectly tied to a company's regular operations. As mentioned above, if the construction company sells real estate and marketable securities, the income from such non-manufacturing activities is to list in the non-operating items section.

Financial analysts use the income statement for data to evaluate financial ratios such as return on equity (ROE), return on assets (ROA), gross profit margin, operating profit margin (also referred to earnings before interest and taxes margin or EBIT margin), net profit margin (EAT margin) and earnings before interest taxes and amortization margin (EBITDA, which is crucial to manufacturing companies). The income statement is frequently shown in a common-sized format, which provides each line item on the income statement as a percent of sales. In this way, analysts can easily see which costs make up the largest percentage of sales. Analysts also use the income statement to compare quarter-over-quarter (QOQ) performance, which could be more precisely evaluated a company’s performance in shorter period. Besides, the income statement typically provides two to three years of historical data of the same item (include some notes for changes of such items) for comparison.

### 2.1.3 Cash flow statement

The statement of cash flows or the cash flow statement, as it's generally referred to, is a financial statement that summarizes the amount of cash and cash equivalents entering and leaving a company. Next, we shall see the primary structure of cash flow statement calculation process.

Figure 2.3 A primary example of cash flow statement calculation process

**ABC Company Inc.**
**Cash Flow Statement**

For the Year Ending: 31/12/201X
Cash at Beginning of Year: **14,300**

| | |
|---|---|
| **Operating Activities** | |
| Cash receipts from customers | 741,000 |
| ***Cash paid for*** | |
| Inventory purchases | (310,500) |
| General operating and administrative expenses | (100,000) |
| Wage expenses | (135,000) |
| Interest | (15,000) |
| Income taxes | (38,500) |
| **Net Cash Flow from Operations** | **142,000** |
| **Investing Activities** | |
| ***Cash receipts from*** | |
| Sale of property and equipment | 40,100 |
| Collection of principal on loans | |
| Sale of investment securities | |
| ***Cash paid for*** | |
| Purchase of property and equipment | (81,000) |
| Making loans to other entities | |
| Purchase of investment securities | |
| **Net Cash Flow from Investing Activities** | **(40,900)** |
| **Financing Activities** | |
| ***Cash receipts from*** | |
| Issuance of stock | |
| Borrowing | |
| ***Cash paid for*** | |
| Repurchase of stock (treasury stock) | |
| Repayment of loans | (38,000) |
| Dividends | (45,000) |
| **Net Cash Flow from Financing Activities** | **(83,000)** |
| **Net Increase in Cash** | **18,100** |

Cash at End of Year: **32,400**

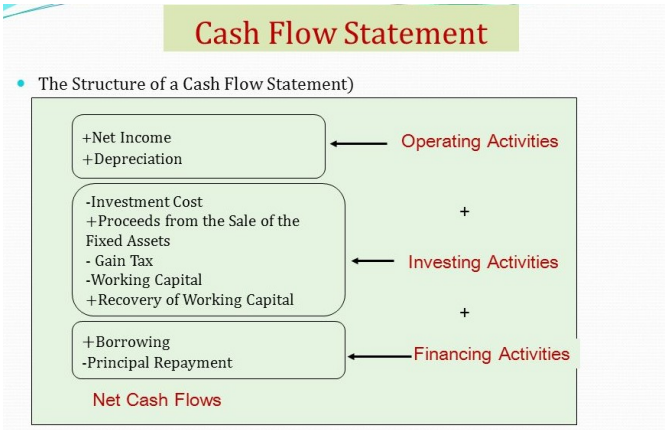
Source: http://helpsme.com/articles/accounting/cash-flow-statement

As the figure 2.3 descripts, we can attain the rudimentary formulas of cash flow statement:

$$net\ cash\ flow = sum\ of\ inflow\text{-}sum\ of\ outflow. \qquad (2.2)$$

(Also, can be presented as the sum of net cash flow from operating activities, investing activities and financing activities, and the following figure 2.4 can demonstrate the details)

Figure 2.4 cash flow statement's structure




Source: http://slideplayer.com/slide/6897190/

As the figure 2.4 descripts, we can also another attain the rudimentary formula of cash flow statement:

$$cash\ at\ the\ end = cash\ at\ the\ beginning + (-)\ net\ cash\ flow. \quad (2.3)$$

Cash flow statement can reflect the influence of a wide range of items on the cash flow in the balance sheet and is classified into three categories as mentioned above: operating, investing and financing activities.

Cash inflows include sales of goods and services, collection of receivable. Cash outflows include payments for inventory, salary and wages payments, taxes, paying payable and so on. What should be warned here is that costs are not equal to outflows as well as revenues are not equal to the inflows of the most time.

In terms of cash flow from operating activities begins with net income, then plus the change in current assets, change in current liabilities and depreciation, more precisely, including collection of receivables and day to day operations.

As for cash flow from investing activities includes sale of plant and equipment, purchase of plant and equipment.

Eventually, cash flow from financing activities involves repurchase of common stock and dividends on common stock.

A cash flow statement is another basic structure of position, situation for a company. It can help determine whether a company has enough liquidity or cash to pay its costs. A company can use the current cash flow statement to forecast future cash flow, which assist the budgeting activities.

For investors, the cash flow statement reflects a company's financial health. Typically, the more cash available for business operations, the better we will trust this company. However, this is not a hard and fast rule. Sometimes a negative cash flow owing to a company's growth strategy, which can be seen as expanding its operations.

By assessing the cash flow statement, we can get a clear picture of how much cash a company obtains and then acquire a solid understanding of the financial well-being of a company.

## 2.2 Common-size analysis

A common-size or vertical analysis descripts line items as a percentage of one selected or common figure (usually the sum will be 100% and act as a foundation or be higher). Creating such a common-size financial statements makes it easier to evaluate a company over time and compare it within industry competitors. By utilizing common-size financial statements can investors notice tendencies, thereby analyzing and predicting its future figures, which means that a raw financial statement absolutely would not disclose. We usually divide the types of such analysis into two parts: horizontal common-size analysis and vertical common-size analysis.

The following figure 2.5 can clearly demonstrate the process of common-size analysis:

Figure 2.5 general process of common -size analysis

| | 2010 | | 2009 | |
|---|---|---|---|---|
| | Amount | Percent | Amount | Percent |
| Assets | | | | |
| Current assets | | | | |
| Cash and cash equivalents | $ 5,943 | 8.7% | $ 3,943 | 9.9% |
| Marketable securities | 426 | 0.6% | 192 | 0.5% |
| Accounts receivable (net) | 6,323 | 9.3% | 4,624 | 11.6% |
| Merchandise inventory | 3,372 | 4.9% | 2,618 | 6.6% |
| Other current assets | 1,505 | 2.2% | 1,194 | 3.0% |
| Noncurrent assets | | | | |
| Property, plant and equipment (net) | 19,058 | 28.0% | 12,671 | 31.8% |
| Intangible assets | 28,469 | 41.8% | 9,157 | 23.0% |
| Other assets | 3,057 | 4.5% | 5,449 | 13.7% |
| Total assets | $68,153 | 100.0% | $39,848 | 100.0% |
| | | | | |
| Liabilities and shareholders' equity | | | | |
| Current liabilities | | | | |
| Short-term obligations | 4,898 | 7.2% | 464 | 1.2% |
| Accounts payable and other liabilities | 10,923 | 16.0% | 8,127 | 20.4% |
| Income taxes payable | 71 | 0.1% | 165 | 0.4% |
| Noncurrent liabilities | | | | |
| Long-term debt | 19,999 | 29.3% | 7,400 | 18.6% |
| Other liabilities and deferred taxes | 10,786 | 15.8% | 6,250 | 15.7% |
| Shareholders' equity | | | | |
| Preferred stock (net of repurchased stock) | (109) | (0.2%) | (104) | (0.3%) |
| Common stock | 4,558 | 6.7% | 280 | 0.7% |
| Retained earnings | 37,402 | 54.9% | 34,443 | 86.4% |
| Accumulated income (loss) | (3,630) | (5.3%) | (3,794) | (9.5%) |
| treasury stock | (16,745) | (24.6%) | (13,383) | (33.6%) |
| Total liabilities and shareholders' equity | $68,153 | 100.0% | $39,848 | 100.0% |

Source: https://saylordotorg.github.io/text_managerial-accounting/s17-02-common-size-analysis-of-financ.html

### 2.2.1 Horizontal common-size analysis

Horizontal analysis allows investors and analysts to easily determine how a company has

performed over time. In addition, analysts and investors could use horizontal analysis to compare a company's growth rates related to its competitors in the same industry. Horizontal analysis can be used on any item in a company's financials from sales to earnings per share (EPS) and is of great use when comparing the performance of desperate companies. A 17% increase of revenue compared with the last year could be the typical example of usage of such analysis. Changes in trend can be determined as absolute or relative change. The formulas are as follows,

$$absolute\ change = a_1 - a_0, \tag{2.4}$$

$$relative\ change = \frac{a_1 - a_0}{a_0}. \tag{2.5}$$

where $a_0$ is the amount of the item in the base year (usually the benchmark year), $a_1$ is the amount of the item in the comparison year (usually the following year).

### 2.2.2 Vertical common-size analysis

Vertical analysis (also known as the most frequently used method of common-size analysis) shows each item on a statement as a percentage of a base item within the statement.

In general, to implement a vertical analysis of balance sheet, the total of assets and the total of liabilities and stockholders' equity are generally used as the rudimentary figures. All individual items of assets (or groups of assets if condensed form balance sheet is used) are shown as a percentage of total assets. The current liabilities, long term debts and all equities are shown as a percentage of the total liabilities and stockholders' equity.

Especially, to conduct a vertical analysis of income statement, sales figure (seen as revenue) is generally used as the base and all other components of income statement like cost of good sales, gross profit, operating costs, income tax, and net income etc. are presented as a percentage of sales.

In a vertical analysis the percentage is computed by using the following formula 2.6:

$$percentage\ of\ base = \frac{amount\ of\ individual\ item}{amount\ of\ base} \cdot 100. \tag{2.6}$$

A basic vertical analysis needs an individual statement for a reporting period (one of three

statements as mentioned above), and comparative statements may be planned to add the efficiency of such analysis.

## 2.3 Financial ratios analysis

Fundamental analysis is an analytical method for investors usage to value companies based on a study of corporate profitability, liquidity and other financial measures. One way to do this is to look at the general, qualitative factors of a company. Another approach to fundamental analysis considers tangible and measurable quantitative factors. This means, for instance, crunching the numbers and closely analyzing financial statements such as the balance sheet and income statement. When used in conjunction with other methods, quantitative analysis can produce excellent results and give patient investors an edge over time.

The most important method in this thesis could be the ratio analysis, which is one way to make sense of these corporate data. Financial ratios are comparison of financial data in the form of financial ratios to assess the financial health of the company and are calculated from financial data and market data, among which is relationship (i.e. the ratio has some economical interpretation). Looking at ratios is more involved than simply comparing different figures from the balance sheet, income statement and cash flow statement. It requires relating these calculated ratios against previous years, other companies, the industry the company is in, and even the macroeconomy. Ratios can give investors a glimpse into the relationships among and between individual values that relate to a company's operations and link them to how a company has performed in the past, and how it might perform in the future. The result is a potentially robust method of valuing the shares of a company.

In the following subchapters, several commonly used and helpful ratios will be shown and explained, which include the profitability ratios, liquidity ratios, solvency ratios and activity ratios.

### 2.3.1 Profitability ratios

Profitability ratios are a group of financial metrics that are applied to assess a business's capacity to generate earnings compared to its expenses and other relevant costs happened during a specific period of time. Generally speaking, having a higher value relative to a competitor's ratio or relative to the same ratio from a previous period indicates that the company is well-being.

**Gross profit margin (GPM)** is a financial metric used to assess a company's financial health and business model by disclosing the proportion of money left over from revenues after accounting for the cost of goods sold (COGS). Gross profit margin (also known as gross margin), is calculated by dividing gross profit by revenues. The formula is as follows,

$$GPM = \frac{revenue - COGS}{revenues}. \quad (2.7)$$

A company is reluctant to pay for its operating costs without an abundant gross margin. In general, a company's gross profit margin should be stable unless there have been changes to the company's business model.

In addition, gross profit margin changes may also be driven by industry changes in regulation or even changes in a company's pricing strategy.

**Operating profit margin (OPM)** assesses how much profit a company makes on a euro of sales / revenues, after paying for operating expenses of production such as salaries and raw materials, but prior to paying interest or tax. It is calculated by dividing a company's operating profit by its net sales. The formula is as follows,

$$OPM = \frac{EBIT}{total\ revenue}. \quad (2.8)$$

where EBIT is earnings before interests and taxes, which can be calculated as Gross Income - (Operating Expenses + Depreciation & Amortization)

Unfortunately, this operating margin should only be used to compare companies that operate in the same industry, and ideally have similar business models and annual sales. Companies in different industries with wildly different business models have very different operating margins. Therefore, comparing them would be meaningless.

**Net profit margin (NPM)** is the ratio of net profits to revenues for a company. Typically, could be expressed as a percentage, net profit margin shows how much of each euro collected by a company as revenue converts into profit. The formula is as follows,

$$net\ profit\ margin = \frac{net\ profit}{revenue}. \qquad (2.9)$$

Net profit margin is regarded as one of the most significant indicators of a business's financial health. It can give a more exact view of how profitable a business is, thereby tracking increases and decreases in its net profit margin, a business can assess whether current operations are effective. Additionally, as net profit margin is expressed as a percentage rather than a euro amount, which makes it accessible to compare the profitability of at least two businesses regardless of their differences in size, that means, the limitation could be broken. Ultimately, a business can use its net profit margin to predict profits based on revenues.

**Return on assets (ROA)** is an indicator of how profitable a company is relative to its total assets. The return on assets gives a manager, investor, or analyst an image as to how efficient and effective a company's management is at manipulating its assets to generate incomes. The formula is as follows,

$$return\ on\ assets = \frac{EBIT}{total\ assets}. \qquad (2.10)$$

What should be mentioned is that some investors add interest expense back into net income when using this calculation because they prefer to use operating returns before cost of debt. Additionally, the ROA is termed as "return on investment" (ROI).

The return on assets could be the most useful tool for comparing companies in the same industry, as different industries use assets in disparate ways. Apparently, the higher ROA, the more efficiencies of the use of assets, the more profits can be created by using such assets, the stronger profitability of the company, the higher level of business management, and vice versa.

**Return on equity (ROE)** is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by disclosing how much profit a company generates with the amount shareholders have invested. ROE is expressed as a percentage and the formula is as follows,

$$return\ on\ equity = \frac{net\ income\ (EAT)}{shareholder's\ equity}. \quad (2.11)$$

Net income is for the full fiscal year (before dividends paid to common stock holders but after dividends to preferred stock). It also known as "return on net worth" (RONW). Return on equity is also one of the most commonly used metrics by fundamental analysis and help investors evaluate when searching for a look-in. Commonly, most shareholders or stakeholders pay much attention to it.

### 2.3.2 Liquidity ratios

Liquidity ratios evaluate a company's capacity to pay debt obligations and its margin of safety through the calculation of metrics including the current ratio, quick ratio and cash ratio. Current liabilities are analyzed corresponding to liquid assets (referred to current assets) to assess the coverage of short-term debts in an emergency.

**Current ratio** is a liquidity ratio that measures a company's ability to pay short-term obligations. To conduct this ability, the current ratio considers the total current assets of a company (both liquid and illiquid) relative to that company's current total liabilities. The formula is as follows,

$$current\ ratio = \frac{current\ assets}{current\ liabilities}. \quad (2.12)$$

The current ratio is called "current" mainly because, unlike some other liquidity ratios, it incorporates all current assets and liabilities, which can be seen in the balance sheet. The current ratio is also known as the working capital ratio.

One limitation of using such ratio is using the ratio to compare different companies with one another. Because business operations can differ substantially between industries, comparing the current ratios of companies in different industries with one another will not necessarily lead to any productive insight. In this regard, it is always more meaningful to contrast companies within the same industry.

**Quick Ratio** is an indicator of a company's short-term liquidity and measures a company's ability to meet its short-term obligations with its most liquid assets. Because we're only concerned with the most liquid assets, the ratio excludes inventories from current assets. The

formula is as follows,

$$quick\ ratio = \frac{cash + accounts\ receivable}{current\ liabilities}. \quad (2.13)$$

While a quick ratio lower than 1 does not necessarily mean the company is going into default or bankruptcy, it could mean that the company is relying heavily on inventory or other assets to pay its short-term liabilities. Overall, the higher the quick ratio, the better the company's liquidity position. However, too high a quick ratio may indicate that the company has too much cash sitting in its reserves, which without accurate using. It may also mean that the company have high account receivables, indicating that the company may have a dilemma that collecting on its account receivables, thereby influencing its regular operations.

**Cash Ratio** is the ratio of a company's total cash and cash equivalents to its current liabilities. The cash ratio is generally a more conservative look at a company's ability to cover its liabilities than other liquidity ratios because other assets, including accounts receivable, are left out of the equation. Hence, the formula is as follows,

$$cash\ ratio = \frac{cash + marketable\ securities}{current\ Liabilities}. \quad (2.14)$$

Additionally, such ratio is more useful when it is compared to industry averages and peer groups averages. A low cash ratio may be an indicator of a company's strategy to have low cash reserves. However, certain industries operate with higher current liabilities and lower cash reserves. Subsequently, a higher cash ratio does not necessarily reflect a company's strong performance, that means, however, high cash ratios may indicate that a company is inefficient in the utilization of cash or not maximizing the potential benefit of low-cost loans, which means that such ratio should be treated in a rational way.

### 2.3.3 Solvency ratios

Solvency ratios, also referred to leverage ratios, are key metrics used to assess a business's capacity to meet its long-term debt and other obligations. The solvency ratio indicates whether a company's cash flow is sufficient to meet its short-term and long-term liabilities. Ordinarily, the lower a company's solvency ratio, the greater the probability that it will default on its debt

obligations, the lower the risks in certain periods such company has.

**Debt ratio** is the ratio of total debt to total assets. Total debt includes both short-term and long-term debt. There are several debt ratios, which give users a general idea of the company's overall debt load as well as its mix of equity and debt. And generally, the debt ratio we referred to has such a following formula,

$$debt\ ratio = \frac{total\ liabilities}{total\ assets}. \tag{2.15}$$

Debt ratio can be used to determine the overall level of financial risk a company and its shareholders surface. In general, the greater the amount of debt held by a company, the greater the potential level of financial risk the company could face, including default or bankruptcy. Debt is also a format of financial leverage. The more levered a company is, the greater the level of financial risk. What should not be neglected, a certain amount of leverage can contribute to a company's growth. Well-run companies seek an optimal amount of financial leverage for their situation.

**Debt-to-equity ratio** is calculated by dividing a company's total liabilities by its stockholders' equity, which is a debt ratio used to measure a company's financial leverage. The D/E ratio indicates how much debt a company is using to finance its assets relative to the value of shareholders' equity. The formula is as follows,

$$debt\text{-}to\text{-}equity\ ratio = \frac{total\ liabilities}{shareholders'\ equity}. \tag{2.16}$$

The result can be expressed either as a number or as a percentage. The debt/equity ratio is also referred to as a risk or gearing ratio. As with most ratios, when using the debt/equity ratio, it is very important to consider the industry in which the company operates. Because different industries rely on different amounts of capital to operate, and use that capital in different ways, a relatively high D/E ratio may be common in one industry while a relatively low D/E may be common in another. Therefore, there is no solid standard to measure the level of this ratio especially in different industries.

**Interest coverage** is a debt ratio and profitability ratio used to evaluate how easily a company can pay interest on its outstanding debt. The interest coverage ratio may be calculated by

dividing a company's earnings before interest and taxes (EBIT) during a given period by the company's interest payments due within the same period. The formula is as follows,

$$interest\ coverage = \frac{EBIT}{interest\ paid}. \qquad (2.17)$$

Generally, stability in interest coverage ratios is one of the most important things to look for when analyzing the interest coverage ratio in this way. A declining interest coverage ratio is often something for investors to be wary of, as it indicates that a company may be unable to pay its debts in the future. Overall, interest coverage ratio is a very good assessment of a company's short-term financial health.

### 2.3.4 Activity ratios

Activity ratios measure a business's capacity to transform different accounts within its balance sheets into cash or sales. Activity ratios measure the efficiency of assets usage, leverage or other such balance sheet items and are crucial in assessing whether a company's management is doing a good enough job of generating revenues and cash from its resources in hand.

**Average collection period** is the approximate amount of time that it takes for a business to receive payments owed in terms of accounts receivable. The average collection period is calculated by dividing the average balance of accounts receivable by total net credit sales for the period and multiplying the quotient by the number of days in the period. The formula is as follows,

$$average\ collection\ period\ (ACP) = \frac{accounts\ receivable}{revenues} \cdot 360. \qquad (2.18)$$

Where Days is Total amount of days in period, AR is Average amount of accounts receivables, Credit Sales is Total amount of net credit sales during period.

It is fair to say that a company should compare the average collection period to the credit terms extended to customers. As a standalone figure, the average collection period does not hold much value; instead, it is a metric best suited for comparison over time. A company experiences the greatest benefit from calculating the average collection period by maintaining the metric over time and searching for trends.

**Accounts receivable turnover** is an accounting measure used to quantify a firm's effectiveness in extending credit and in collecting debts on that credit. The receivables turnover ratio is an activity ratio measuring how efficiently a firm uses its assets. Receivables turnover ratio can be calculated by dividing the net value of credit sales during a given period by the average accounts receivable during the same period. The formula is as follows,

$$accounts\ receivable\ turnover = \frac{revenues}{accounts\ receivable}. \quad (2.19)$$

Such ratio has several important functions as well as simply assessing whether a company has issues collecting on credit. Though this offers important insight, it does not tell the whole story. By looking at the progression, one can determine if the company's receivables turnover ratio is trending in a certain direction or if there are certain recurring patterns. What is more, by tracking this ratio over time alongside earnings can we able to determine whether a company's credit practices are helping or hurting the company's bottom line.

**Inventory turnover** is a ratio showing how many times a company's inventory is sold and replaced over a period of time. The days in the period can then be divided by the inventory turnover formula to calculate the days it takes to sell the inventory on hand. It is calculated as sales divided by average inventory. The formula is as follows,

$$inventory\ turnover = \frac{COGS}{average\ inventory}. \quad (2.20)$$

where Average inventory is $\frac{(inventory\ last\ period + current\ inventory)}{2}$.

For example, inventory turnover is calculated as the cost of goods sold divided by average inventory. The number of inventory days is calculated by dividing 365 by 10, which is 36.5. Using this approach, inventory turns over 10 times a year and is on hand for approximately 36 days. It gives a more accurate result, as it does not include a markup.

**Total assets turnover** is the value of a company's sales or revenues generated relative to the value of its assets. The Asset Turnover ratio can often be used as an indicator of the efficiency with which a company is deploying its assets in generating revenue. The formula is as follows,

$$asset\ turnover\ ratio = \frac{revenues}{average\ total\ assets}. \quad (2.21)$$

The higher the asset turnover ratio, the better the company is performing, since higher ratios

imply that the company is generating more revenue per euro of assets. The asset turnover ratio tends to be higher for companies in certain sectors than in others. What ought to be mentioned, comparisons are only meaningful when they are made for different companies within the same sector.

## 2.4 DuPont analysis

DuPont analysis breaks ROE and ROA into their constituent components to determine which of these components is most responsible for changes in ROE and ROA.

Let us take ROA as an example. As we know ROA has two functions, firstly, ROA can be separated into:

$$ROA = \frac{EBIT}{revenues} \cdot \frac{revenues}{total\ assets}. \quad (2.22)$$

This indicates that ROA has strong relationship with operating profit margin and total assets turnover. Thus, if want to analyze the change of ROA, we can get information from operating profit margin and total assets turnover.

Then, ROA also can be divided into:

$$ROA = \frac{EBIT}{revenues} \cdot \frac{revenues}{total\ assets}. \quad (2.23)$$

This is equal to:

$$ROA = net\ profit\ margin \cdot total\ assets\ turnover. \quad (2.24)$$

Next, continuing to make decomposition of EAT:

$$EAT = EBIT \cdot \frac{EBT}{EBIT} \cdot \frac{EAT}{EBT}. \quad (2.25)$$

As can be known, the ratio between EBT and EBIT is the interest burden of a company, $\frac{EAT}{EBT}$ is the tax burden of a company. Thus, we can finally get the decomposition of ROA:

$$ROA = \frac{EBIT}{revenues} \cdot \frac{revenues}{total\ assets} \cdot \frac{EBT}{EBIT} \cdot \frac{EAT}{EBT}. \quad (2.26)$$

For the same theory,

$$ROE = \frac{EAT}{revenues} \cdot \frac{revenues}{total\ assets} \cdot \frac{total\ assets}{equity}. \quad (2.27)$$

Which is equal to:

$$ROE = \frac{EBIT}{revenues} \cdot \frac{revenues}{total\ assets} \cdot \frac{EBT}{EBIT} \cdot \frac{total\ assets}{equity} \cdot \frac{EAT}{EBT}. \quad (2.28)$$

In a nutshell, the DuPont analysis is an effective way to analyze a company, as we can use not only the data from balance sheet, but also the one from income statement. It allows us to have a better understanding that the factors contributing to the most portion of company's revenue.

### 2.4.1 Influence quantification

It reflects how the component ratios contribute to the change in basic ratio. The basic ratio is the item that is under analyzing. The quantification of influences is identical for all methods and the decomposition of the total increment is based on the ratio of the partial indicator's increment relative to the total increment. Therefore, the formula is as follows,

$$\Delta x_{ai} = \frac{\Delta a_i}{\sum \Delta a_i} \cdot \Delta y_x. \quad (2.29)$$

We need to know $a_{i,0}$ and $a_{i,1}$ represent the values of the i-th indicator for the basic period and the comparison period:

$$\Delta a_i = a_{i,1} - a_{i,0}. \quad (2.30)$$

### 2.4.2 Method of gradual changes

According to 2.4.0.7, we can get the n-th component formula:

$$\Delta xa_1 = \Delta a_1 \cdot a_{2,0} \cdot a_{3,0} \cdot ``` \cdot a_{n,0} \cdot \frac{\Delta y_x}{\Delta x},$$

$$\Delta xa_2 = a_{1,1} \cdot \Delta a_2 \cdot a_{3,0} \cdot ``` \cdot a_{n,0} \cdot \frac{\Delta y_x}{\Delta x},$$

.

.

.

$$\Delta x_{an} = \prod_{i<n} ai \cdot \Delta a_n \cdot \frac{\Delta y_x}{\Delta x}. \quad (2.31)$$

where: $x$ is basic ratio, $\Delta x$ is absolute change in the basic ratio, $a$ is component ratio, $\Delta a$ is absolute change in the component ratio, $\Delta x_{a1}$ – absolute change in the basic ratio caused by the change in the first ($a_1$) component ratio.

Every coin has two sides. The advantage of this could be that it can be applied regardless of positive or negative values in component ratio or basic ratio. On the contrary, there exist another disadvantage which order in decomposition is can influence the results.

By using the formula (2.31) can we conduct how component ratios have influence on the basic ratio.

### 2.4.3 Logarithmic decomposition method

Logarithmic decomposition method needs use this function:

$$\Delta y_x = \sum \Delta x_{ai}. \tag{2.32}$$

In order to get a better understanding the components, firstly, we need to make decomposition of $I_x$.

$$I_x = \frac{x1}{x0} = \frac{a_{1,1}}{a_{1,0}} \cdot \frac{a_{2,1}}{a_{2,0}} \cdot ``` \cdot \frac{a_{n,1}}{a_{n,0}} = I_{a1} \cdot I_{a2} \cdot ``` \cdot I_{an} = \prod Ia_{,i}. \tag{2.33}$$

Subsequently, we continue to make logarithmic calculation:

$$\frac{\sum \Delta X_{ai}}{\Delta y_x} \cdot lnI_x = \sum lnI_{ai}. \tag{2.34}$$

Eventually, its formation could be as followed:

$$\Delta x_{ai} = \frac{lnI_{ai}}{lnI_x} \cdot \Delta y_x. \tag{2.35}$$

Where: $x$ is basic ratio, $\Delta x$ is absolute change in the basic ratio, $I_x$ is index of change in basic ratio, $I_a$ is index of change in component ratio.

# 3. Characteristics of the Armatury Group

In this chapter, we are going to demonstrate the history, the products and services, management layer, strengths of Armatury Group.

## 3.1 History

The company ARMATURY Group a.s. is one of the top Czech producers of industrial valves, supplier of piping and accessories and provider of services and counselling. The annual production is 80,000 valves and 500,000 units of piping and accessories. Over 65 % of the production is shipped to the end customers in over 65 countries of the world. The company is a major supplier of comprehensive technological units including project documentation, which offers solutions addressing highly complex issues and designs and implements large-scale projects. ARMATURY Group cooperates with reputable specialists and invests time in projects that benefit society and are environmentally friendly. The success of a company depends on its people mostly. ARMATURY Group employs respected professionals with vast experience as well as young, well-educated employees who have great potential in the company.

Here are the brief histories about the ARMATURY Group.

Its operation started in 2000, the new company is created by a merger of three companies already operating in the Czech and Slovak markets and builds on the expertise and tradition of valve production in the Opava and Hlučín regions. The manufacture of its first own products is launched at the Dolní Benešov plant. The tradition of this dynamically developing company is based upon more than fifty years of history and experience in production of valves in the Hlučín region. In 2001, modern technological facilities purchased. Intensive development of a new range of ball valves, shut-off valves, slide valves, and metallurgical and special valves. Having achieved new development and design technology purchased, resulting in the launch of complete ranges of own products in 2002. When it came to 2003, the company's products enter foreign markets and strengthen their position in the Czech Republic. The company participates

in challenging projects in Russia, China and other countries. What should be mentioned is that its sales office opens in Moscow in 2004. The company acquires export certificates for special valves for the Russian and Ukrainian markets. The company's business is extended to include the development and delivery of automated control systems for technological processes in 2005. Begin with 2006, the production of large ball valves and valves for the energy sector is launched. As for the year 2007, the company builds a new manufacturing plant in Dolní Benešov and purchases new welding technologies and its revenues top CZK 1 billion per annum. In 2008, The production of metallurgical valves is expanded. The company consolidates its position in foreign markets. A new dispatch hall is built in Kravaře. Subsequently, in 2009, the company's range is extended to include the production of high-pressure valves for the nuclear energy sector. Investments are channeled into new technologies and valve testing operations. Continuously, it expands to foreign countries and export to more than 60 countries worldwide, which could be regard as a triumph in the global market in the year 2010. What is definitely worth to mention is that in 2011, the key deliveries are to nuclear power plants in the Czech Republic, Slovakia and Russia, where could be seen as the main markets at that time. Afterwards, it could be a milestone that the company generates record revenues of CZK 2,5 billion in 2012. Next year, it builds two new industrial halls in Dolní Benešov, one for an assembly of valves and the other one is a new central material reception hall. Constantly, ARMATURY Group continues at extensive investments, which has built a new dispatch hall in Dolní Benešov and buy new multifunctional CNC machine tools. Then, in 2015, it moves its premises from Kravaře to Dolní Benešov, where the company ARMATURY Group has a large area of 30,000 $m^2$. Noticeably, ARMATURY Group is opening its office in Germany and expanding into Africa since 2016. Recently, in 2017, this company have strengthened its position in the markets of Central Europe and in the sector of metallurgical valves.

## 3.2 Products and services

In this part, we will introduce the products and services of ARMATURY Group, where the valves, tubes and pipes, flanges, fittings, forgings, fasteners, gaskets, supports, prefabrication,

weldments, a variety of services, etc. could be listed in the following contents.

### 3.2.1 Products

**1) Forgings**

ARMATURY Group supplies certified forgings made of carbon, low-alloy, medium-alloy and high-alloy steels, such as nozzles and forged T-, L-, Y-fittings.

**2) Fasteners**

ARMATURY Group is able to provide you with bolts, nuts, washers and additional fasteners made of steel, stainless steel, with different surface finishes, in accordance with ČSN, DIN, EN, ANSI, TR and other standards.

**3) Gaskets**

ARMATURY Group is able to provide you with different types of gaskets and seals according to the requirements for the respective flanged joint, such as flat gaskets, spiral-wound gaskets, grooved gaskets, RTJ rings.

**4) Supports**

Pipe supports provide for rigid and, at the same time, flexible suspension and anchoring of pipeline routes. Sockets, clips, clamps, stands, or different supports are being provided.

**5) Prefabrication**

ARMATURY Group realizes supplies of prefabricated piping sections, including the required surface treatment and documentation.

**6) Weldments**

ARMATURY Group performs precision welding, including machining on CNC machines and surface treatment according to customer requirements, we use modern welding technologies.

**7) Tubes and Pipes**

ARMATURY Group supplies seamless, welded, heavy-walled, insulated and other pipes and tubes made of carbon steels, including steels for sub-zero temperatures, alloy steels, stainless steels and other special steels, such as P91, P92.

**8) Valves**

The most powerful products of ARMATURY Group in Worldwide Recognized are the valves, which rely on the quality of our valves, supported by long-term development and precision manufacture, just like customers from 5 continents of the world do. Choose from our product range or ask for tailored production. And what is noticeable is that, these products underlie the business model of ARMATURY Group and make up the most profits of the company, then lead it to the business expansion as well as a brighter future.

### 3.2.2 Services

Sale is no end. Rely on its 24/7 emergency service, warranty and post-warranty service, measurement and control services, and more, ARMATURY Group can also provide consumers with project preparation and production, assembly and commissioning, including the implementation of smaller technological units.

**1) Non-stop emergency service**

Emergency service available NON-STOP all year round, on a 24/7 basis. Call the company for FREE at its 800 100 013 line and its specialists will be glad to help whom need to help with.

**2) Warranty and post-warranty service**

Warranty and post-warranty service for ARMATURY Group industrial valves comes as standard procedure. Standard as well as complete product overhauls available.

**3) Installation and assembly**

On-site product installation is available, by using mobile assembly shops.

**4) Repair of valves**

Repairs and adjustments of safety valves are available.

**5) Service and repair**

Perfect product knowledge is a cornerstone for the quality of ARMATURY Group’s services.

**6) Measuring and regulation**

ARMATURY Group designs and delivers electrical equipment and measuring, control and automation systems.

## 3.3 Management layer

In this part, the management layer of ARMATURY Group will be listed, which includes Petr Groh (Chief Executive Officer), Simona Schneiderová (Financial Director), Libor Kremel (Sales Director), Tomáš Prchala (Production Director), Ing. Petr Heider (Technical Director), Ing. Ester Nevřelová (Management Representative for IMS), Kamil Tengler (Quality Control Director).

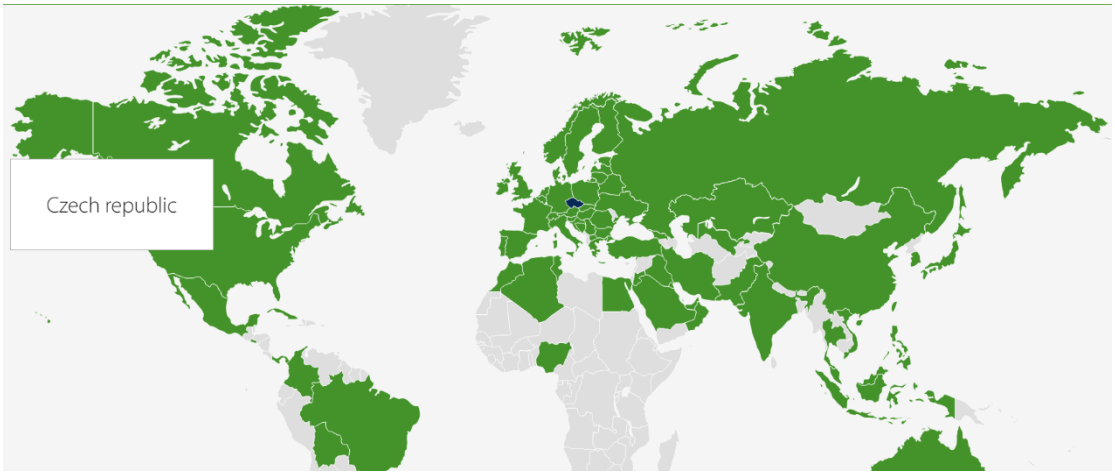
Overall, the success of the company can be seen in a combination of tradition, clear ownership structures, modern background and technologies, knowledge and skills of employees, and mainly customer orientation. Actively listening to the needs and impulses of customers, monitoring trends, supporting development and innovation is the principle of such management layer. Meanwhile, behind the success of Armatury Group, a mixture of great dreams, professional experience and hard work can be seen. The basis of success is to choose the right time and the art of getting on well with people. Ultimately, the layer agrees with that the future of this company depends on everyone and on its approach in which direction it will go.

## 3.4 strengths of the ARMATURY Group

To begin with, ARMATURY Group is among the world's leading manufacturers of industrial valves. Products with the ARMATURY Group brand can be found on 5 continents – in Europe, Asia, Africa, Australia and America. 70% of ARMATURY Group’s products travel to 65 countries of the world. The remaining 30% cover the needs of the domestic market (Czech Republic), particularly in the fields of power engineering, oil and gas industries, chemical and petrochemical industries, metallurgy and water supply engineering.

The following map 3.1 could vividly descript the worldwide market that ARMATURY Group has involved in:

Figure 3.1 Armatury Group global market



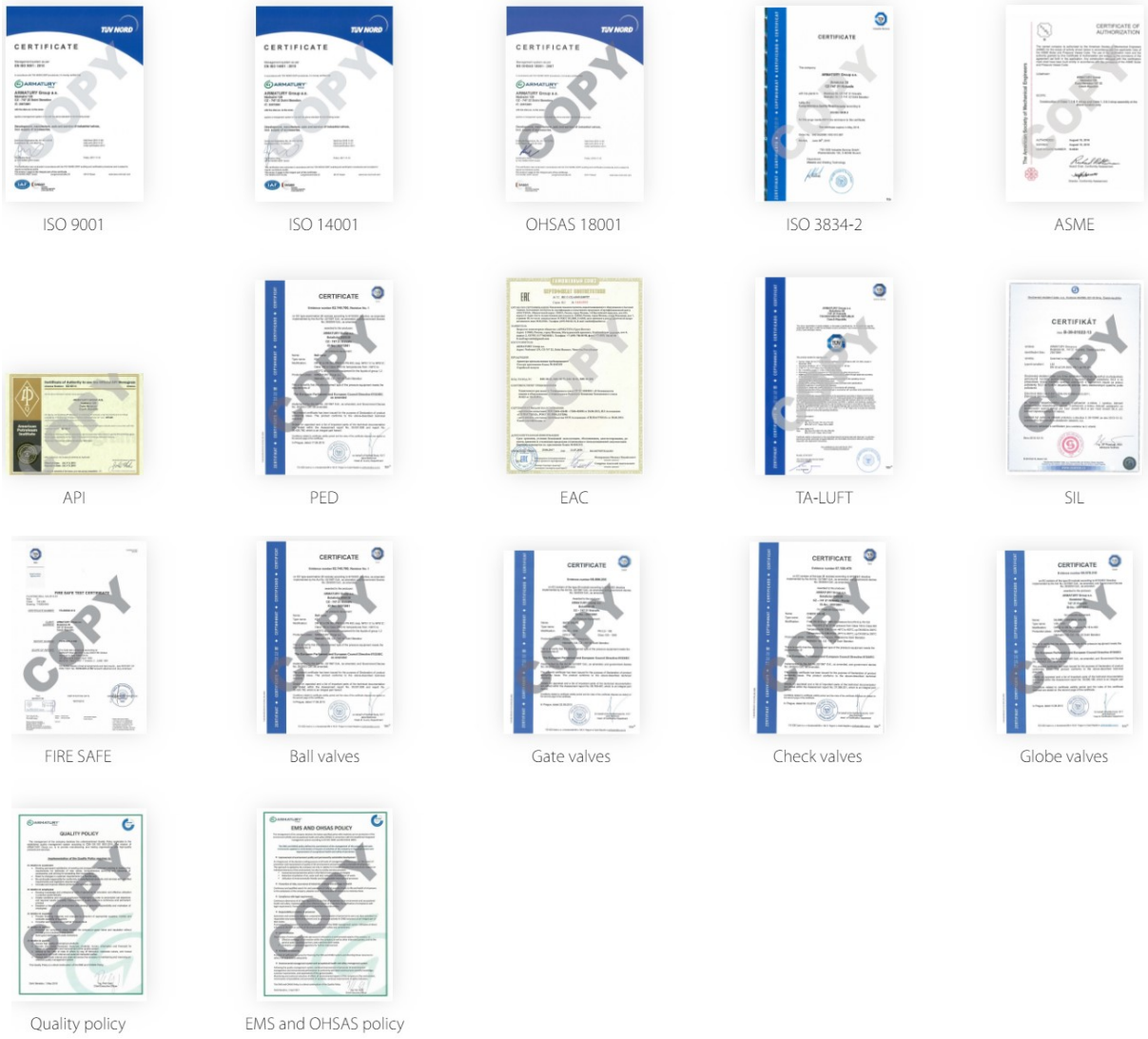

Source: http://www.armaturygroup.cz/en/about-company

In addition, the quality of ARMATURY Group's valves and other products are being confirmed by dozens of satisfied customers who use them daily in the most demanding operations. Quality specialists oversee the quality of products throughout the entire production process, from material receipt and the process of manufacture to assembly, testing, packaging and shipping. All products that travel to ARMATURY Group's customers are proven and meet all legal standards.

The proof of quality of ARMATURY Group's products includes also a series of certificates – system, product, regional and customer ones.

The following figure 3.2 display the overview of ARMATURY Group's certification towards its quality of various products which are being confirmed.

Figure 3.2 Armatury Group's products certification




Source: http://www.armaturygroup.cz/en/about-company

Ultimately, what makes ARMATURY Group so appealing to work with it is the strength of its production lies in years of experience, tailored production and investment in new technologies. Annually ARMATURY Group produces more than 60,000 valves and supply 500,000 items of metallurgical material to companies from 65 countries of the world. The flood of new orders not only from the Czech Republic but also from countries all over the world allows it to expand its production and to gather more experience.

In its team, it has employed almost 600 industry professionals who are able to handle also any above-standard or atypical job. ARMATURY Group can comply with the needs of demanding customers. Most frequently it produces for power engineering, chemical industry,

petrochemical industry, gas and oil production, metallurgy and water supply engineering. What's more, with investing in purchases of development and design technologies that enable ARMATURY Group to continually improve processes, production, as well as the products themselves. In its modern establishment, developing and manufacturing special valves that are being used under the most severe conditions. ARMATURY Group can adapt production to meet EN, ASME, GOST and other standards. Unlike its competitors, ARMATURY Group produce a wide range of valves, both from forgings and weldments, as well as castings. It has own know-how. This makes ARMATURY Group's production more flexible and reliable.

# 4. Financial Analysis of the Armatury Group

In this chapter, we emphasize the financial analysis of financial situation of the Armatury Group with the assistance of methods mentioned in the chapter 2. In this regard, we harness materials and data of financial statements for period 2012 - 2016. Primarily, we make common-size analysis, which will be divided into vertical and horizontal analysis. Subsequently, the financial ratios analysis is to be implemented. Ultimately, by utilizing the DuPont analysis can we evaluate the influence quantification of return on equity (ROE).

## 4.1 Common-size analysis of Armatury Group

Prior to carry out the common-size analysis of Armatury Group, it is necessary for us to harness the balance sheet and income statement of Armatury Group from 2012 to 2016. By doing so, the simplified balance sheet of Tab. 4.1 and the simplified income statement of Tab. 4.2 is followed:

Tab. 4.1 Simplified balance sheet (in Thousands of CZK)

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Total assets | 1,672,238 | 2,047,379 | 2,186,896 | 2,163,031 | 1,939,277 |
| Fixed assets | 325,360 | 463,691 | 643,210 | 717,292 | 790,051 |
| Current assets | 1,336,768 | 1,575,513 | 1,531,288 | 1,441,078 | 1,139,402 |
| Accruals | 10,110 | 8,175 | 12,398 | 4,661 | 9,824 |
| Total liabilities and equity | 1,672,238 | 2,047,379 | 2,186,896 | 2,163,031 | 1,939,277 |
| Equity | 970,841 | 1,014,836 | 1,056,629 | 1,094,227 | 735,815 |
| Liabilities | 695,396 | 1,017,485 | 1,124,322 | 1,065,471 | 1,203,461 |
| Accruals | 6,001 | 15,058 | 5,945 | 3,333 | 1 |

Source: company's annual reports

Tab. 4.1 summarizes the assets, liabilities and equity components of Armatury Group from 2012

to 2016. It has mentioned before that equity plus liabilities equals to total assets (2.1), the data above certify such formula. According to the Tab. 4.1, the total assets increased continuously and reached its peak in 2014 with nearly 2,200,000 TCZK, then witnessed a slight drop to nearly 1,940,000 TCZK in 2016.

Subsequently, the financial situation of Armatury Group will be shown:

Tab. 4.2 Simplified income statement of Armatury Group (in Thousands of CZK)

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Revenues | 1,044,139 | 853,104 | 856,114 | 598,009 | 324,245 |
| COGS | 853,580 | 661,377 | 700,884 | 479,363 | 267,157 |
| Gross Profit | 190,559 | 191,727 | 155,230 | 118,646 | 57,088 |
| Total operating expenses | 147,574 | 143,616 | 108,696 | 102,285 | 442,616 |
| EBIT | 42,985 | 48,111 | 46,534 | 16,361 | -385,528 |
| Net interest expenses and other expenses | 6,626 | 5,889 | 9,058 | 9,258 | 11,583 |
| EBT | 36,359 | 42,222 | 37,476 | 7,103 | -397,111 |
| Income taxes | 353 | 4,347 | 1,877 | 1,203 | -31,981 |
| EAT | 36,006 | 37,875 | 35,599 | 5,900 | -365,130 |

Source: company's annual reports

From Tab. 4.2, the revenues, income before tax and net income from 2012 to 2016 can be seen. Compared with the balance sheet, however, the income statement descripts another picture. The turnover (sales, revenue) experienced an approximately threefold decline from 1,044,139 TCZK in 2012 to around 325,000 TCZK in 2016. Similarly, COGS kept the same trend. When it came to 2016, the operating profit was below 0 which was -385,528 TCZK. In terms of EAT, it constantly eliminated to 5,900 in 2015. Noticeably, the EAT in 2016 accounted for -365,130 TCZK, which could be a shock to investors and transformed some unoptimistic information of the company's situation.

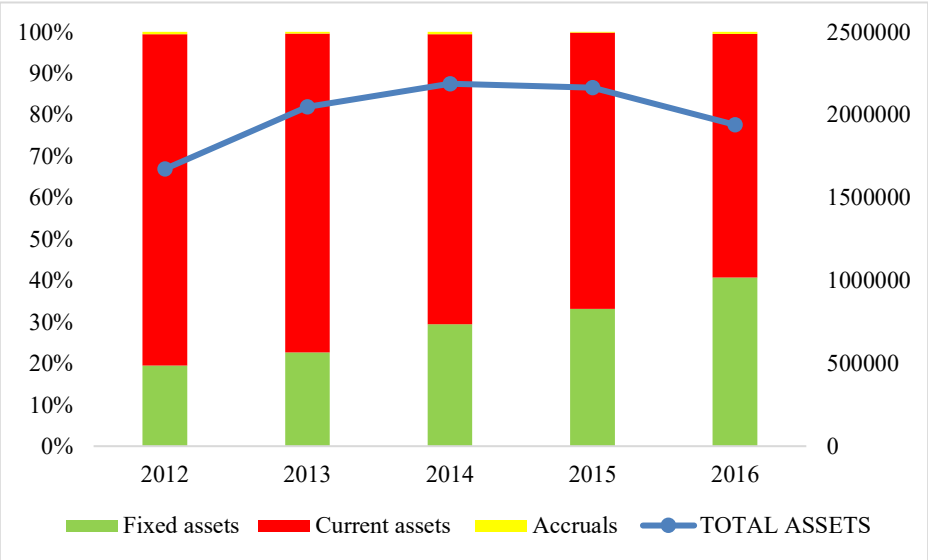
### 4.1.2 Vertical common-size analysis of Armatury Group

In this part, we pay more attention to the vertical common-size analysis of Armatury Group, which may analyze the frame of these statements. Afterwards, the proportion of each item in total assets from 2012 to 2016 is to be presented, particularly the fixed assets. Now, we can notice the Tab. 4.3 and Chart.4.1 And the calculation process is reliant on the formula (2.6).

Tab. 4.3 The proportion of each item in total assets

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| TOTAL ASSETS | 100% | 100% | 100% | 100% | 100% |
| Fixed assets | 19.46% | 22.65% | 29.41% | 33.16% | 40.74% |
| Intangible fixed assets | 0.12% | 0.22% | 0.14% | 0.07% | 0.25% |
| Tangible fixed assets | 17.79% | 20.51% | 26.75% | 28.13% | 37.07% |
| Financial investments | 1.54% | 1.91% | 2.52% | 4.96% | 3.42% |
| Current assets | 79.94% | 76.95% | 70.02% | 66.62% | 58.75% |
| Accruals | 0.60% | 0.40% | 0.57% | 0.22% | 0.51% |

Chart 4.1 Vertical common-size analysis of assets



As can be seen from the Tab.4.3, we have access to know that the fixed assets, which are considered as the most profitable and useful assets for such a manufacturing company to generate profits, had a dramatic grow by above 20p.p to 40.74% in 2016, which was nearly doubling that in 2012. Among these three items, the intangible fixed assets had a far less significant increase by 0.13% during these 5 years. In contrast, the tangible fixed assets grew to 37.07% in 2016 which was more than double times than that in 2012, though the financial investments had a two times growth, it still occupied with a relatively low proportion. What is noticeable, the current assets represented a slight decrease during these 5 years and reached at 58.75% in 2016. Actually, this item always took up the largest portion, especially in 2012, which was 79.94%. Eventually, the accruals maintained its level at nearly 0.5% during such a period. To conclude, in order to generate more profits, Armatury Group expanded the scope of its fixed assets, such one was likely to catch up with the portion of current assets.

Followed by making vertical common-size analysis of each item in total equity and liabilities from 2012 to 2016, Tab. 4.4 and Chart.4.2 could explicitly demonstrate such information.

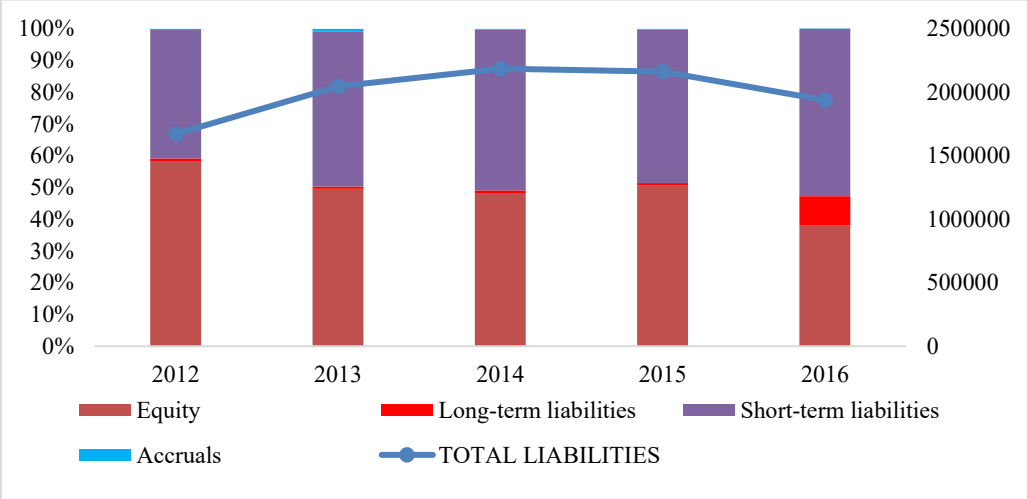
Tab.4.4 The proportion of each item in total liabilities and equity

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| TOTAL LIABILITIES | 100% | 100% | 100% | 100% | 100% |
| Equity | 58.06% | 49.57% | 48.32% | 50.59% | 37.94% |
| Long-term liabilities | 0.78% | 0.78% | 0.75% | 0.78% | 9.20% |
| Short-term liabilities | 40.20% | 48.91% | 50.66% | 48.44% | 52.60% |
| Accruals | 0.36% | 0.74% | 0.27% | 0.15% | 0.00% |

According to the Tab.4.4 and Chart 4.2, the entire frame of Armatury Group's equity and liabilities can be distinctly shown. The proportion of equity reduced to 37.94% despite witnessing some fluctuations. Instead, the short-term liabilities made up the highest proportion, which had a nearly 12p.p increase during these 5 years. In addition, the long-term liabilities had a surprising rise in 2016, which at 9.20%. Short-term liabilities remained its level at average

45%. Like the same situation in the assets, accruals always accounted for the minority and reached its bottom line at 2016, which was nothing (0%).

Chart 4.2 Vertical common-size analysis of equity and liabilities




Overall, Armatury Group displayed a trend that it utilized more short-term debt for financing instead of equity.

Meanwhile, vertical common-size analysis is applied in income statement. The proportions are shown in Tab. 4.5.

As can be seen from the Tab.4.5, the total operating expenses had a significant increase from 14.13% in 2015 to 136.51% in 2016, whereas its level was maintained before 2016. When it came to 2016, the EBIT fell to a negative number (-118.90%). Noticeably, the net interest and other expenses had a slight growth in 2016, which was 3.57%, afterwards, due to minus such item and income taxes, its EBT and EAT were both negative and above -100%. Such situation reveals that the company's financial loans and other debts are the main reason to induce the big loss in 2016.

Tab. 4.5 The proportion of each item in Income statement

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Revenues | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| COGS | 81.75% | 77.53% | 81.87% | 80.16% | 82.39% |
| Gross Profit | 18.25% | 22.47% | 18.13% | 19.84% | 17.61% |
| Total operating expenses | 14.13% | 16.83% | 12.70% | 17.10% | 136.51% |
| EBIT | 4.12% | 5.64% | 5.44% | 2.74% | -118.90% |
| Net interest expenses and other expenses | 0.63% | 0.69% | 1.06% | 1.55% | 3.57% |
| EBT | 3.48% | 4.95% | 4.38% | 1.19% | -122.47% |
| Income taxes | 0.03% | 0.51% | 0.22% | 0.20% | -9.86% |
| EAT | 3.45% | 4.44% | 4.16% | 0.99% | -112.61% |

### 4.1.3 Horizontal common-size analysis of Armatury Group

In this part, the highlight could be the horizontal common-size analysis of Armatury Group. It is basically a tendency analysis. Based on formula (2.4) and (2.5), the calculation process may go smoothly. Finally, we are going to contrast items between every two years. Therefore, the following table can explain the absolute change.

As can be seen from the Tab. 4.6 and Tab 4.7, the increase speed of total assets in Armatury Group presented a slower and slower trend despite its absolute number getting higher and higher. On the contrary, the total liabilities, as analyzed before, getting higher and higher absolute number, accompanying with faster and faster growth rate. Moreover, the equity in Armatury Group took up lower portion during these 5 years and had a negative growth rate particularly in 2016. In terms of the classified assets, fixed assets showed a constant increase trend but getting slower, the current assets occupied with less portion. Noticeably, the accruals witnessed a host of fluctuations during this period.

Tab. 4.6 Absolute change of each item in balance sheet (in Thousands of CZK)

| Components | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|---|
| TOTAL ASSETS | 375,141 | 139,517 | -23,865 | -223,754 |
| Fixed assets | 138,331 | 179,519 | 74,082 | 72,759 |
| Current assets | 238,745 | -44,225 | -90,210 | -301,676 |
| Accruals | -1,935 | 4,223 | -7,737 | 5,163 |
| Total liabilities and equity | 375,141 | 139,517 | -23,865 | -223,754 |
| liabilities | 332,204 | 106,837 | -59,594 | 133,715 |
| equity | 43,995 | 41,793 | 37,598 | -358,412 |

Tab.4.7 Relative changes of each item in balance sheet

| Components | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|---|
| TOTAL ASSETS | 22.43% | 6.81% | -1.09% | -10.34% |
| Fixed assets | 42.52% | 38.72% | 11.52% | 10.14% |
| Current assets | 17.86% | -2.81% | -5.89% | -20.93% |
| Accruals | -19.14% | 51.66% | -62.41% | 110.77% |
| Total liabilities and equity | 22.43% | 6.81% | -1.09% | -10.34% |
| liabilities | 48.48% | 10.50% | -5.30% | 12.56% |
| equity | 4.53% | 4.12% | 3.56% | -32.75% |

Such information reveals that liabilities are going to make up the most representative part of Armatury Group's assets, however, the assets themselves in hand are more likely to be harsh to be generated and pooled.

Meanwhile, horizontal common-size analysis is also applied in income statement. The absolute change and relative change are shown in Tab. 4.8 and Tab. 4.9.

Tab. 4.8 Absolute change of income statement (in Thousands of CZK)

| Components | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|---|
| Revenues | -191,035 | 3,010 | -258,105 | -273,764 |
| COGS | -192,203 | 39,507 | -221,521 | -212,206 |
| Gross Profit | 1,168 | -36,497 | -36,584 | -61,558 |
| Total operating expenses | -3,958 | -34,920 | -6,411 | 340,331 |
| EBIT | 5,126 | -1,577 | -30,173 | -401,889 |
| Net interest expenses and other expenses | -191,035 | 3,010 | -258,105 | -273,764 |
| EBT | 5,863 | -4,746 | -30,373 | -404,214 |
| Income taxes | 3,994 | -2,470 | -674 | -33,184 |
| EAT | 1,869 | -2,276 | -29,699 | -371,030 |

Tab. 4.9 Relative change of each item of income statement

| Components | 2012/13 | 2013/14 | 2014/15 | 2015/16 |
|---|---|---|---|---|
| Revenues | -18.30% | 0.35% | -30.15% | -45.78% |
| COGS | -22.52% | 5.97% | -31.61% | -44.27% |
| Gross Profit | 0.61% | -19.04% | -23.57% | -51.88% |
| Total operating expenses | -2.68% | -24.31% | -5.90% | 332.73% |
| EBIT | 11.93% | -3.28% | -64.84% | -2456.38% |
| Net interest expenses and other expenses | -11.12% | 53.81% | 2.21% | 25.11% |
| EBT | 16.13% | -11.24% | -81.05% | -5690.75% |
| Income taxes | 1131.44% | -56.82% | -35.91% | -2758.44% |
| EAT | 5.19% | -6.01% | -83.43% | -6288.64% |

According to the two tables, the turnover or revenues of Armatury Group descripts an incredibly negative trend year by year, when it came to the year 2016, such situation, unfortunately, got

worse, which had a -45.78% relative growth. However, what is comforting, COGS disclosed a similar trend, which means that Armatury Group still has profit space to survive from the market. So, its gross profit could be positive but was confronted with demanding situation where was declining continuously during this period.

As for the operating profits, it reached the peak until 2013. Subsequently, the difference of last year and next year was larger and larger. Followed by net interest income and other income, in 2016, which can be spotted that a dramatic increase was set upon Armatury Group, just like putting an extraordinary obstacle in front of the company.

In addition, the income taxes maintained its level until 2016, which had suddenly surpassed its original scope. Due to such reasons, it is fair to say that the company's EBT as well as EAT suffered a rigid winter in 2016. And what is really shocking is that the EAT in 2016 had a relative change of -6288.64%, such kind of decrease reflected the company's setback.

Form the angle of overview, Armatury Group was confronted with a more serious dilemma stage by stage, particularly in its profitability. Meanwhile, financial stress including the interest costs and income taxes could be another risk even a calamity which challenged the company to a big extent.

However, if just acknowledge such problem's existence, it could be insulated. In 2016, Armatury Group had immense cash in hand, which can fill the real gap of negative EAT. This will be listed in the following financial ratio analysis.

## 4.2 Financial ratios analysis

The approaches of financial ratios analysis have been illustrated in chapter 2. In this regard, by harnessing the relevant data can we achieve to analyze Armatury Group in other viewpoints.

### 4.2.1 Profitability ratio

In this part, rudimentarily, a host of effective data are necessary to be used in order to calculate the profitability ratios. Results from this, it's feasible for us to analyze what we have gotten

from the profitability ratio and determine whether it has benefits to the Armatury Group. Specifically, Tab. 4.10 displays the raw data.

Tab.4.10 Raw data used to calculate profitability ratios (in thousands of CZK)

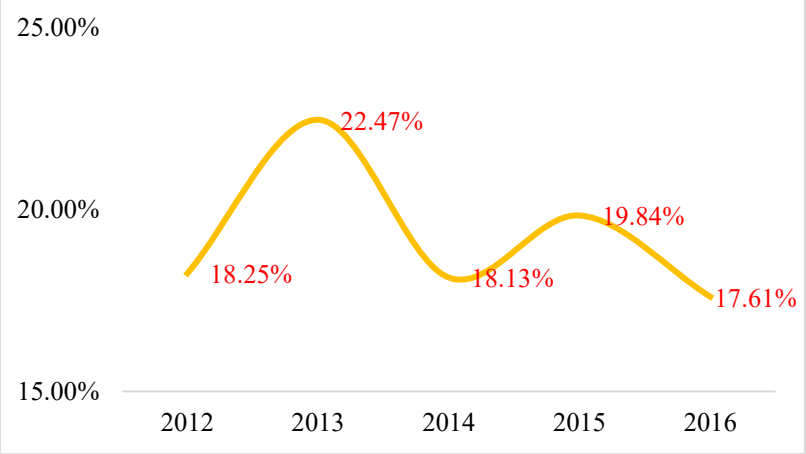
| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Total assets | 1,672,238 | 2,047,379 | 2,186,896 | 2,163,031 | 1,939,277 |
| Revenues | 104,4139 | 853,104 | 856,114 | 598,009 | 324,245 |
| Gross profit | 190,559 | 191,727 | 155,230 | 118,646 | 57,088 |
| EBIT | 36,359 | 42,222 | 37,476 | 7,103 | -397,111 |
| EAT | 36,006 | 37,875 | 35,599 | 5,900 | -365,130 |

Source: company's annual reports

**1) Gross profit margin**

What has known is that the gross margin has influence on operating profit margin, and formula (2.7) underlies the calculation process. Next, the chart 4.3 will show the messages.

Chart 4.3 Gross profit margin



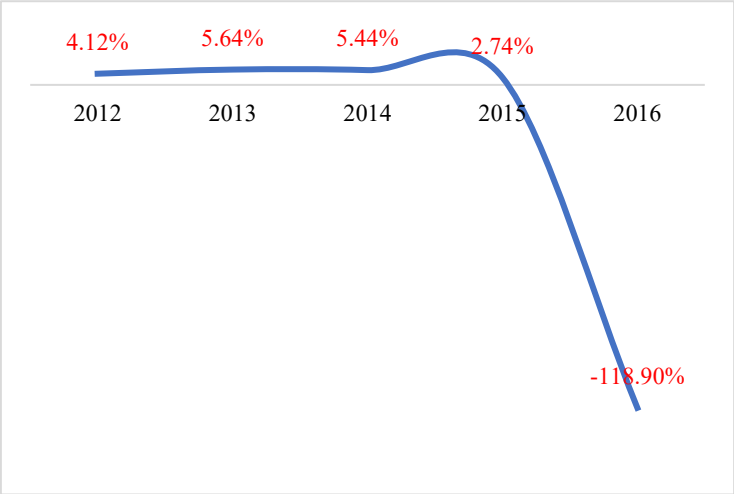

From the chart 4.3, the gross profit margin was always higher than 17% during these 5 years. Generally, it witnessed fluctuations from 18.2% in 2012 to 17.61% in 2016, having reached its peak at 22.47%, then got its bottom at 17.61%. These margins could be relatively low, mainly due to the excess production of components manufacture industry and its recession trend in that period, thereby causing less demands and fulfilled market. What should be mentioned is that the company has relatively high COGS, which may take up nearly 80% through selling,

transporting, etc.

**2) Operating profit margin**

It is fair to say that operating profit margin evaluates the business efficiency, reflecting the capacity of management to obtain profits in case of the consideration of operating costs. It is calculated based on (2.8).

Chart 4.4 Operating profit margin

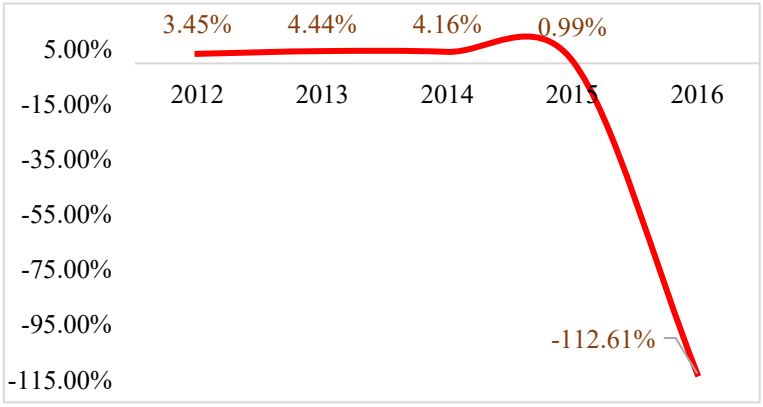



According to chart 4.4, Armatury Group represented a reverse “V” trend in terms of its EBIT margin. In 2012, it started with 4.12%, followed by reaching its peak at 5.64% in 2013, which was similar to the situation of gross profit margin in that year. Afterwards, a constant decline happened till got the -118.90% in 2016. Two reasons contributed to such situation. Firstly, the depreciation of long-term tangible and intangible property had a dramatic increase from 53,028 TCZK in 2015 to 84,731 TCZK in 2016, such expenses cannot be avoided, however, it could be seen as an accelerated depreciation (where reached a 58% speed), compared with the number of such item since 2012 maintained its increase speed of 12%. On the other hand, the item value adjustments in operating area also experienced a dramatic increase from 50,702 in 2015 to 319,835 in 2016. Firstly, this happened for the expansion of new markets that brought a lot of costs. Subsequently, the variation in reserves and rectifying items in operation field and complex expenses for subsequent periods could be the most significant reason, which soared from -2,326 in 2015 to 190,518 in 2016. That revealed Armatury Group was confronted with high devaluation and depreciation of its equipment.

### 3) Net profit margin

According to Chapter 2, having understood that net profit margin measures the capacity of the company to obtain EAT during a certain period, we will calculate this margin rely on formula (2.9).

Chart 4.5 Net profit margin

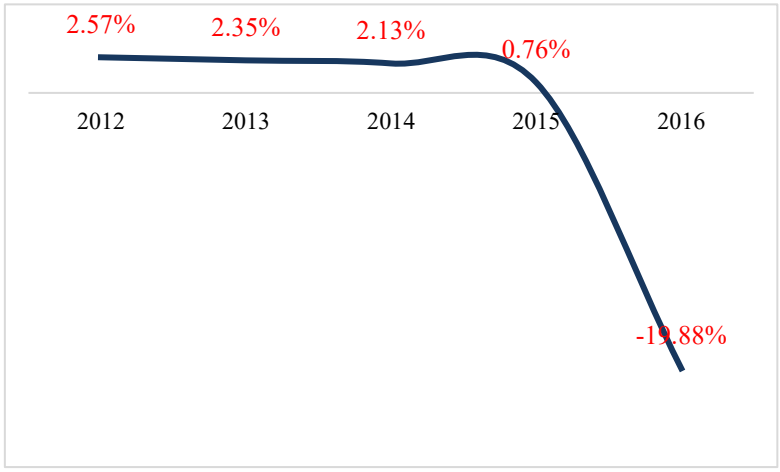



Viewed from chart 4.5, this margin represented similar situation of the operating profit margin, when it came to 2013, its peak value was 4.44%, then started its decline trend, however, in 2016, this difference could be seen as a huge gap, which was downwards to -112.61%. Seemingly, Armatury Group experienced a tremendous loss during such a year. Even though, the root could be detected in the income tax item, whose number decreased from 1,203 TCZK in 2015 to -31,981 TCZK in 2016, and mainly because the deferred tax took up a huge amount of money which was -31,387 TCZK compared with that in last year which was just 460 TCZK. Meanwhile, the cash of Armatury Group was 87,704 TCZK, which was more than 60 times than that in 2015, by possessing so much cash supports the company pay back the deferred income taxes on a large scale. Moreover, the largest number could be the adjustments that influenced the EBIT (190,518 TCZK in 2016). Consequently, by comparison, the adjustments contributed the most significant part of Armatury Group's sudden slump of EAT margin again.

### 4) Return on assets

As mentioned before, return on assets (ROA) measures the return earned by a company on its assets, the higher ROA, the higher efficiency of the management of assets. The ratio is calculated based on (2.10).

Chart 4.6 Return on assets

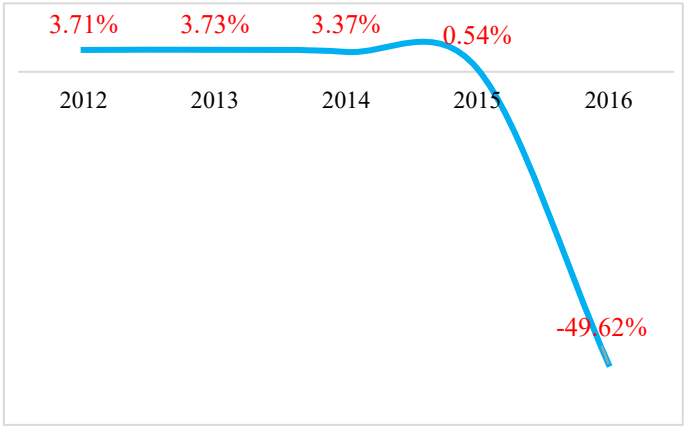



Corresponding to chart 4.6, the ratio experienced a similar situation to above ratios. The highest value was 2.57% in 2012, then constantly declined till 2016, which was -19.88%. The reason why it appeared a negative number was mentioned before, which was the overwhelming operating expenses in 2016 due to the devaluation of material and depreciation of equipment in hand. Such situation reveals that Armatury Group always maintained a relatively low level of assets return during this period and its assets generally were able to generate less profits for the stakeholders.

**5) Return on equity**

ROE could be the most eye-catching ratio to shareholders, which reflect the direct return from corporation's equity. As mentioned before, the calculation process will be reliant on (2.11).

Chart 4.7 Return on equity




Derive from this chart 4.7, compared with the previous ratios, ROE will be a little higher during this period. Whereas in contrast, in 2015, having experienced an approximately stable level, the

ratio reached at 0.54%, then suddenly reduced to -49.62% in 2016. We can analyze it step by step. To begin with, the proportion of equity in Armatury Group was increasing continuously, especially in 2015, which was 1,094,227 TCZK. In addition, the EAT in Armatury Group shrank suddenly in 2015, which was 5,900 TCZK compared with its previous accounting period where was 35,599 TCZK (accounted for nearly one seventh of it, as can be seen, this ratio was nearly the same portion of the previous one). Eventually, due to pay back deferred income taxes, EAT in 2016 slumped a great deal, which triggered the sudden slump of ROE with around -50%.

### 4.2.2 Liquidity ratios

In this part, the calculation will emphasize to evaluate current ratio, quick ratio and cash ratio. Then we determine the capacity of Armatury Group to meet its short-term obligations from 2012 to 2016. To begin with, some effective data will be listed below for us to count conveniently.

Tab 4.11 Data used to calculate liquidity ratios. (in thousands of CZK)

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Current assets | 1,336,768 | 1,575,513 | 1,531,288 | 1,441,078 | 1,139,402 |
| Current liabilities | 666,801 | 972,802 | 964,546 | 887,974 | 1,020,027 |
| Cash and cash equivalents | 2,358 | 582 | 1,357 | 14,424 | 88,704 |
| Accounts receivables | 622,077 | 923,703 | 771,232 | 602,297 | 535,981 |
| Marketable securities | 0 | 0 | 0 | 0 | 0 |

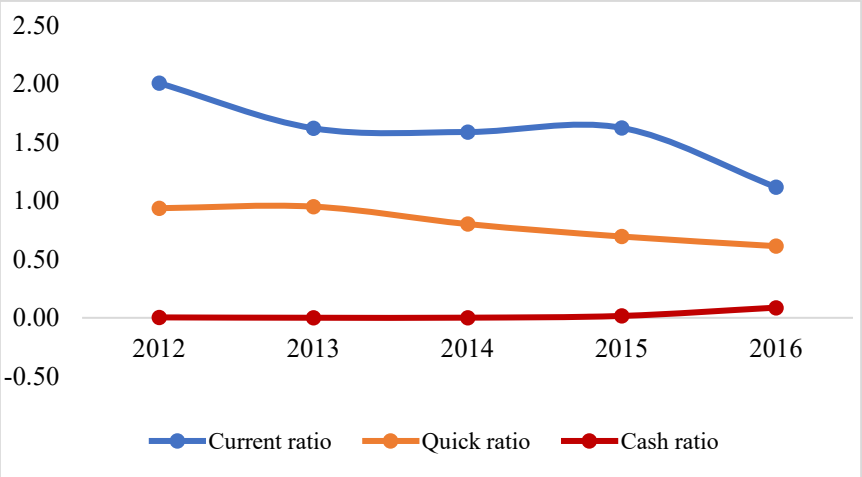
Source: company's annual reports

Subsequently, we combine the current ratio, quick ratio and cash ratio to analyze. In Chapter 2, what have known are the calculation formulas of liquidity ratios, which (2.12), (2.13) and (2.14) underlie.

Tab 4.12 Liquidity ratios

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Current ratio | 2.00 | 1.62 | 1.59 | 1.62 | 1.12 |
| Quick ratio | 0.94 | 0.95 | 0.80 | 0.69 | 0.61 |
| Cash ratio | 0.0035 | 0.0006 | 0.0014 | 0.0162 | 0.0870 |

Chart 4.8 Liquidity ratios




**1) Current ratio**

The ultimate trend of the current ratio was decreasing over years. As can be seen, before 2016, such ratio could maintain a stable level of 1.6. However, with the expansion of current liabilities (1,020,027 TCZK) and the relative shrink of current assets in 2016 (1,139,402 TCZK), the ratio fell to 1.12, which was nearly a half of that in 2012. Overall, Armatury Group can generally meet some urgent obligations as its current ratio always above 1 during these 5 years.

**2) Quick ratio**

The quick ratio suffered the same situation, which constantly reduced from 0.94 in 2012 to 0.61 in 2016. In initial year, the accounts receivable reached its highest level of 932,703 TCZK, resulting in the peak of 0.95. As can be seen that the accounts receivable fell down year by year, instead, the cash in hand increasingly grew, especially in 2016, there was approximately 867,00 TCZK, which was eight times than that in previous year and fifty-five times than that in 2012. Therefore, although the accounts receivable decreased a lot, the huge amount of cash in 2016 put a halt to the quick ratio from declining furthermore. It also reveals that Armatury Group

paid more and more attention to the cash held but was confronted a little bit risks to meet its short-term obligations.

**3) Cash ratio**

Stem from the chart above, noticeably, the cash ratio not only became the lowest one, but nearly shrank 100 times than that in quick ratio. However, the ultimate trend was not as the same as the two former ratios, instead, it presented a slight increase after the descend in 2013 even surpassed the value in the initial year (0.0035). As for its reason, the company's cash and cash equivalents raised over five years, what should be mentioned is its proportion or absolute number was too low to account for a larger percentage. Such results could be not optimistic, if somewhat disasters or calamities happen, it could deduce the same catastrophe to company's situation. And through the chart 4.8, we can acquire information that there is a mutual and interdependent influences and correlations between the liquidity ratios.

### 4.2.3 Solvency ratios

In this part, the calculation is based on the analysis of the capacity of Armatury Group to meet its long-term debt obligations. Prior to analyze the ratio, some effective data will be listed below for us to calculate conveniently.

Tab. 4.13 Data used to calculate solvency ratios (in thousands of CZK)

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Total assets | 1,672,238 | 2,047,379 | 2,186,896 | 2,163,031 | 1,939,277 |
| Total debts | 695,396 | 1,017,485 | 1,124,322 | 1,065,471 | 1,203,461 |
| Equity | 970,841 | 1,014,836 | 1,056,629 | 1,094,227 | 735,815 |
| EBIT | 42,985 | 48,111 | 46,534 | 16,361 | -385,528 |
| Interest paid | 6,626 | 5,889 | 9,058 | 9,258 | 11,583 |

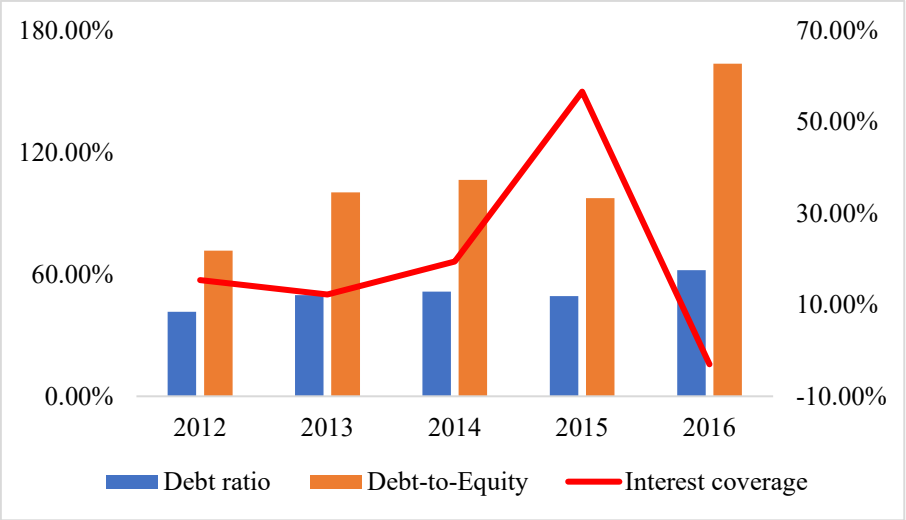
Source: company's annual reports

The calculation of debt ratio is reliant on (2.15) and debt-to-equity ratio is based on (2.16). Afterwards, the combination of debt ratio and the debt-to-equity ratio will be analyzed.

Tab.4.14 Solvency ratios

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Debt ratio | 41.58% | 49.70% | 51.41% | 49.26% | 62.06% |
| Debt-to-Equity | 71.63% | 100.26% | 106.41% | 97.37% | 163.55% |
| Interest coverage | 15,41% | 12.24% | 19.47% | 56.59% | -3.00% |

Chart 4.9 Solvency ratios




**1) Debt ratio**

Stem from these table and chart, we can spot that the debt ratio represented a slight increase trend from 41.58% to 62.06% during this period. As can be seen in the Tab.4.14, in the initial year, the total assets were relatively lower than that in the following years, as the same as the debt, while equity held its status at around 100,000 TCZK. When it came to 2016, equity maintained its scale while the debt increased sharply, resulting in the higher percentage of the debt ratio.

**2) Debt-to-equity ratio**

Noticeably, the debt-to-equity ratio followed the similar trend but had a more dramatic increase from 71.63% in 2012 to 163.55% in 2016. The last year's result reveals that Armatury Group commenced to use more debt than equity for financing. This phenomenon has a host of explanations, the most reliable one could be that the company's development was not satisfied, or the debt can raise more money and less costs than equity did. In the short-term, such financing approach could be effective and relieve the stress of cash flow, however, if company's leverage

is too high for a long period, it couldn't mean a healthy and sustainable development path.

**3) Interest coverage**

According to the chart 4.9, we will find that such ratio transcended over times until 2016, which was from nearly 16% to approximately -3%. Seemingly, such ratio revealed somehow positive sigh to the company. However, this could be influenced by its declining EBIT over years and stable interest expenses. So, it cannot mean that the company's pay back capacity is increasing but its EBIT is facing serious circumstances.

### 4.2.4 Activity ratios

In this part, we are going to analyze the capacity and flexibility of Armatury Group's revenues circulation. To begin with, some effective data would be listed below for references.

Tab. 4.15 Data used to calculate activity ratios (in thousands of CZK)

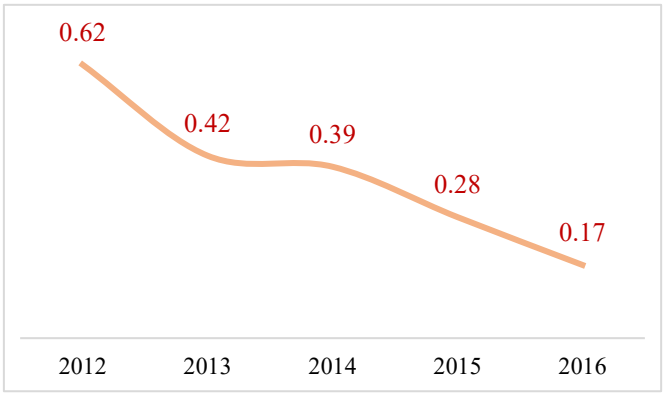
| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Total assets | 1,672,238 | 2,047,379 | 2,186,896 | 2,163,031 | 1,939,277 |
| Revenues | 1,044,139 | 853,104 | 856,114 | 598,009 | 324,245 |
| Accounts receivables | 622,077 | 923,703 | 771,232 | 602,297 | 535,981 |

Source: company's annual reports

**1) Total assets turnover**

It is known that total assets turnover reflects the sales capacity whether is stronger or weaker. It's calculated based on (2.20).

Chart 4.10 Total assets turnover



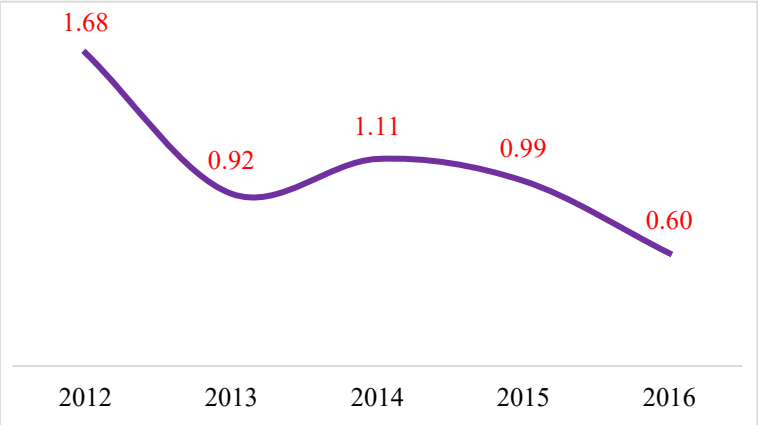

According to the chart 4.10, a continuous descend was illustrated to us. In 2012, though Armatury Group had the lowest number of assets during the 5 years, the revenues could be

generated by the largest scale, which disclosed that the management of assets usage made great contributions. However, with the expansion of total assets in the following years, the revenues did not grow but constantly reduced, which triggered the continuous decrease of total assets turnover. As a low ratio shows that the company is generating few revenues per unit of assets, in the future, Armatury Group should concentrate on developing the new products or breaking through on technologies to increase sales.

**2) Accounts receivable turnover**

As mentioned before, accounts receivable turnover measures the degree of corporate accounts receivable flow. It is calculated based upon (2.19).

Chart 4.11 Accounts receivable turnover

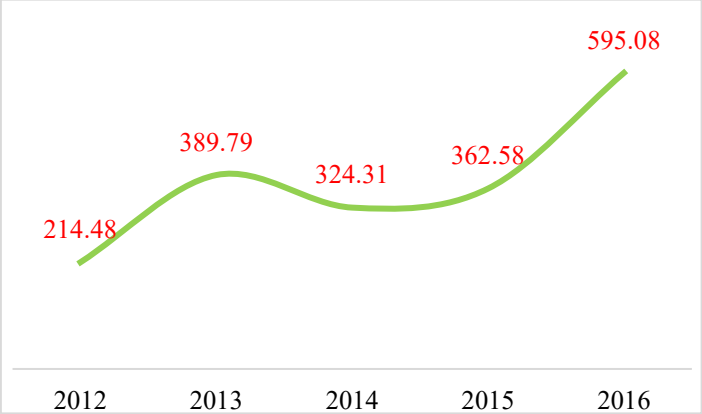



As can be seen from the chart 4.11, such ratio experienced a fluctuation and fell to 0.6 in 2016, which was nearly one third of the initial year. Until 2015, it could be seen as a normal level, however, when it came to 2016, the accounts receivable surpassed the revenues 40%, which demonstrated that the flexibility of revenues was really low in that year. On the contrary, in 2012, most revenues could be derived from the direct cash in hand and had less accounts receivable in that year. Overall, during this period, more and more accounts receivables appeared regardless of less revenues, Armatury Group ought to be careful about such situation where means that less flexibility and security of revenues.

**3) Average collection period**

In general, average collection period measures the capacity to convert into money of receivables whether are stronger or weaker. The calculation is based upon (2.18).

Chart 4.12 Average collection period (days)




From the chart 4.12, the days of collection was increasingly expanded from 214.48 days in 2012 to 595.08 days in 2016, which was more than doubling than that in the initial year and surpassed the length of single accounting period. The picture may even be regarded as a bank-loan payback timetable. Actually, such thought reveals that Armatury Group had a giant collection circulation of its revenues. It could not be seen as a positive sign, as its cash flow was confronted with larger and larger fatigue and pressure as well as the hazard that won't return any more, eventually, the liquidity of Armatury Group was worse.

## 4.3 DuPont analysis

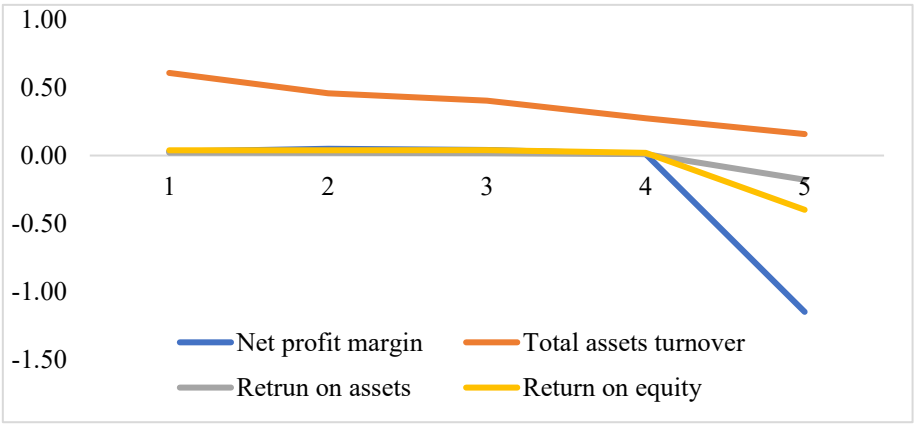
In this part, we solely pay attention to the return on equity (ROE). What has known, return on equity can be divided into three components: net profit margin, total assets turnover and financial leverage. Subsequently, net profit margin is divided into other three components: tax burden, interest burden and operating profit margin. Therefore, combining them can help us to get the return on equity collectively. More details can be seen below, on the Tab.4.16.

Tab.4.16 DuPont analysis

| Components | Components | Order | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| Tax burden | $\frac{\text{EAT}}{\text{EBT}}$ | 1 | 0.84 | 0.79 | 0.77 | 0.36 | 0.95 |
| Interest burden | $\frac{\text{EBT}}{\text{EBIT}}$ | 2 | 0.85 | 0.88 | 0.81 | 0.43 | 1.03 |
| Operating profit margin | $\frac{\text{EBIT}}{\text{Revenues}}$ | 3 | 0.03 | 0.05 | 0.04 | 0.01 | -1.22 |
| Net profit margin | $\frac{\text{EAT}}{\text{Revenues}}$ | 4 | 0.03 | 0.04 | 0.04 | 0.01 | -1.13 |
| Total assets turnover | $\frac{\text{Revenues}}{\text{Average total assets}}$ | 5 | 0.61 | 0.46 | 0.40 | 0.27 | 0.16 |
| Return on assets | $\frac{\text{EAT}}{\text{Average total assets}}$ | 6 | 0.02 | 0.02 | 0.02 | 0.00 | -0.18 |
| Financial leverage | $\frac{\text{Average total assets}}{\text{Average total equity}}$ | 7 | 1.81 | 1.87 | 2.04 | 2.02 | 2.24 |
| Return on equity | $\frac{\text{EAT}}{\text{Average total equity}}$ | 8 | 0.04 | 0.04 | 0.03 | 0.01 | -0.40 |

In the Tab. 4.16, (4) = (1) × (2) × (3), (6) = (4) × (5), (8) = (6) × (7).

Chart. 4.13 Return on equity




Tab. 4.16 illustrates the DuPont analysis of Armatury Group during these 5 years. Such process has separated into a host of different sections. The chart 4.13 descripts that ROE had decreased over years, clearly, a little bit lower than that of total assets turnover and higher than net profit margin. In addition, ROE kept the similar trend with other three ratios.

To be more detailed and get a better understanding, we focus on net profit margin, which is divided into three components, including tax burden, interest burden and operating profit

margin. As can be seen from the table and chart, the net profit margin experienced a continuous decline, except for 2015, such ratio had a far less significant increase of 0.02. what is worth to mention, the tax burden almost took up the largest proportion, though had a dramatic increase in 2016, which occupied with 1.21, it did not remain its status. Alternatively, the interest burden could not transcend the tax burden until 2016, which was approximately twenty times (15.84) than that in the initial year (0.78). This change reveals the information that interest burden has potentials to take place of the importance of the tax burden, which could also show that the transformation of financing ways of Armatury Group

Apparently, the operating profit margin witnessed fluctuations, which started from 0.04 in 2012, then reached its peak at 0.08 in 2013, soon fell to 0.04 again in 2015. Due to the sudden decline of revenues (nearly 300,000 TCZK) and the relatively stable COGS, the EBIT margin decreased to negative value. According to such circumstances, we harbor the view that Armatury Group meet its dilemma of profitability and heavy burden of costs during these 5 years.

Moreover, having noticed the ROE kept downwards, a problem mentioned emerged: Armatury Group was reluctant to generate and distribute more profits to its shareholders, instead, the proportion of debt soared, which could be more effective to pool capital for operations. Similarly, the ROA kept going down, reflecting that the EAT's constant decline.

## 4.4 Influence quantification

In this part, application will focus on the method of influence quantification, which includes methods of gradual changes and logarithmic decomposition method.

### 4.4.1 Gradual changes method

In this part, we focus on utilizing the gradual changes to calculate the ROE. Therefore, prior to implement such method, the basic ratio is return on equity, the component ratios are: net profit margin ($\frac{\text{EAT}}{\text{Revenues}}$), total assets turnover ($\frac{\text{Revenues}}{\text{Assets}}$), and financial leverage ($\frac{\text{Assets}}{\text{Equity}}$). After telling this, we have access to calculate the return on equity every two years.

**1) Gradual changes of ROE between 2012 and 2013.**

Tab.4.17 Gradual changes of ROE between 2012 and 2013.

| | $a_0$(2012) | $a_1$(2013) | $\triangle a_i$ | $\triangle x_{ai}$ | order |
|---|---|---|---|---|---|
| $a_1=\frac{\text{EAT}}{\text{Revenues}}$ | 0.03 | 0.04 | 0.01 | 0.011 | 3 |
| $a_2=\frac{\text{Revenues}}{\text{Assets}}$ | 0.61 | 0.46 | -0.15 | -0.012 | 2 |
| $a_3=\frac{\text{Assets}}{\text{Equity}}$ | 1.81 | 1.87 | 0.06 | 0.001 | 1 |
| Sum | x | x | x | 0.0002 | x |

Tab. 4.17 illustrates that total assets turnover has the highest impact on the ROE from 2012-2013. The total change of ROE is 0.0002 by using the method of gradual changes, which is the same amount of the difference of ROE between 2012 and 2013. Therefore, Armatury Group should take efforts to increase its revenue. Noticeably, the net profit margin is close to the total assets turnover, revealing that it still has non-neglect power to influence ROE, and Armatury Group need to decrease the interest costs or (utilize the tax shield to decrease the taxes).

**2) Gradual changes of ROE between 2013 and 2014.**

Tab. 4.18 Gradual changes of ROE between 2013 and 2014.

| | $a_0$(2013) | $a_1$(2014) | $\triangle a_i$ | $\triangle x_{ai}$ | order |
|---|---|---|---|---|---|
| $a_1=\frac{\text{EAT}}{\text{Revenues}}$ | 0.04 | 0.04 | 0.00 | -0.002 | 3 |
| $a_2=\frac{\text{Revenues}}{\text{Assets}}$ | 0.46 | 0.40 | -0.05 | -0.004 | 1 |
| $a_3=\frac{\text{Assets}}{\text{Equity}}$ | 1.87 | 2.04 | 0.17 | 0.003 | 2 |
| Sum | x | x | x | -0.004 | x |

Tab. 4.18 shows that the total assets turnover took up the largest influence on the ROE from 2013-2014, too. The sum of -0. 004p.p is exactly the difference of ROE between 2013 and 2014. However, such negative number certifies that the decline of revenues plays the biggest role in affecting the ROE. The prescription could be that Armatury Group should increase the efficiency of assets usage and cannot let the assets go up regardless of sales growth. Meanwhile, the financial leverage should be curbed in a rational way, as it is the second important factor

during these 2 years.

**3) Gradual changes of ROE between 2014 and 2015.**

Tab. 4.19 Gradual changes of ROE between 2014 and 2015.

| | $a_0$(2014) | $a_1$(2015) | $\triangle a_i$ | $\triangle x_{ai}$ | order |
|---|---|---|---|---|---|
| $a_1=\frac{\text{EAT}}{\text{Revenues}}$ | 0.042 | 0.010 | -0.032 | -0.0262 | 1 |
| $a_2=\frac{\text{Revenues}}{\text{Assets}}$ | 0.404 | 0.275 | -0.129 | -0.0026 | 2 |
| $a_3=\frac{\text{Assets}}{\text{Equity}}$ | 2.044 | 2.022 | -0.022 | -0.0001 | 3 |
| Sum | x | x | x | -0.0289 | x |

According to the Tab. 4.19, replacing by the net profit margin, which is the most crucial factor that has impact on the ROE from 2014 to 2015, the total assets turnover could not be neglected. During such time, EAT accelerated to decrease, due to more and more interest costs and taxes, which has correlation with the expansion of debt in total assets, eventually, less profits can be held, directly influencing the return to shareholders. Armatury ought to do its part to decrease the proportion of debt obligations.

**4) Gradual changes of ROE between 2015 and 2016.**

Tab. 4.20 Gradual changes of ROE between 2015 and 2016

| | $a_0$(2015) | $a_1$(2016) | $\triangle a_i$ | $\triangle x_{ai}$ | order |
|---|---|---|---|---|---|
| $a_1=\frac{\text{EAT}}{\text{Revenues}}$ | 0.01 | -1.13 | -1.14 | -0.63 | 1 |
| $a_2=\frac{\text{Revenues}}{\text{Assets}}$ | 0.27 | 0.16 | -0.12 | 0.27 | 2 |
| $a_3=\frac{\text{Assets}}{\text{Equity}}$ | 2.02 | 2.24 | 0.22 | -0.04 | 3 |
| Sum | x | x | x | -0.40 | x |

Stem from the Tab. 4.20 we can also spot that the net profit margin maintains its influence and status and continues to plague the company from moving forward. In such period, as mentioned before, the deferred taxes had dramatically increased, resulted from the larger scale of cash held, but triggers a slump of EAT in 2016, which made the company's EAT turn to negative number. Hence, Armatury Group should take measures to balance its deferred taxes in a normal level

and keep doing more technology innovations in order to eliminate the expenses and achieve more profit growths. Otherwise, it is hard to say how long such loss situation will be lasted.

### 4.4.2 Logarithmic decomposition method

Primarily, to make statements more precise, we skip the data in 2016 (as its negative number cannot illustrate meaningful result), solely by picking up the data of 2014 and 2015 can we to compare the result. Now, the index of the change will be calculated as follows,

$$\triangle x = 0.00548618782475442 - 0.0343708438230914 = -0.0289,$$

$$I_{ROE} = \frac{ROE1}{ROE0} = \frac{0.00548618782475442}{0.0415820790221863} = 0.15962.$$

Tab. 4.21 Logarithmic decomposition of ROE

| | $a_0$(2014) | $a_1$(2015) | $I_{ai}$ | $\triangle x_{ai}$ | order |
|---|---|---|---|---|---|
| $a_1=\frac{\text{EAT}}{\text{Revenues}}$ | 0.042 | 0.010 | 0.24 | -0.0226 | 1 |
| $a_2=\frac{\text{Revenues}}{\text{Assets}}$ | 0.404 | 0.275 | 0.68 | -0.0061 | 2 |
| $a_3=\frac{\text{Assets}}{\text{Equity}}$ | 2.044 | 2.022 | 0.99 | -0.0002 | 3 |
| Sum | x | x | x | -0.0289 | x |

As can be seen from the Tab. 4.21, the sum of this logarithmic decomposition is totally the same of that in gradual change method. In this regard, following years will not be calculated as it will generate the same results. After all, we have access to analyze such situation in desperate ways, however, what must be careful is that choosing the right method accorded with the right number, for instance, the method above cannot apply negative number to analyze.

# 5. Conclusion

The aim of this bachelor thesis is to analyze the financial situation of Armatury Group during the period from 2012 to 2016.

The thesis is divided into five chapters: the introduction, description of financial analysis, characteristics of the Armatury Group, financial analysis of the Armatury Group and the conclusion.

In the theoretical part, we introduced a variety of methods of financial analysis, then it is fair to say that Armatury Group is a manufacturing company that has a large scale in Europe. Meanwhile, there is no doubt that Armatury Group is a relatively young company with rapid expansion of its business power, which digs into becoming the ace of the components and raw material (especially valves) supplier in the worldwide.

In the practical part, we implemented financial analysis of Armatury Group by harnessing the financial statements from 2012-2016. Stem from the common-size analysis, what can be found, that Armatury Group's total liabilities had the most significant growth during that period, revealing that debt is gain its popularity in Armatury Group for financing. Corresponding to the financial ratios analysis, for profitability ratios, Armatury Group are confronted with the risk of decline of its sales and profits; for liquidity ratios, Armatury Group's flexibility is always descending; for the solvency ratios, the debt obligation is growing constantly in its total assets and the continuous decline of EBIT mainly deduces the growth of the interest coverage; for activity ratios, longer collection period discloses the worse liquidity as well. As can be seen from the DuPont analysis, the total assets turnover was the largest influence factor during 2012 to 2014, revealing that the decline of profitability emerged and showed its impact on ROE. When it came to 2014 to 2016, such situation was replaced by the net profit margin, which reflected that the heavy burden of interests and taxes had a nonnegligible power to lead Armatury Group's shareholder policy. According to the influence quantification of ROE, the net profit margin, total assets turnover and financial leverage make up the rudimentary frame of ROE. Overall, Armatury Group's financial situation was bad and getting worse.

In this day and age, confronted with fierce and fulfilled competition in the material industry and low macroeconomy recovery of Europe, Armatury Group is likely to suffer shocks and waves from different aspects. Put eye-sight further, here we provide some suggestions to Armatury Group, which ought to pay more attention to new emerging markets such as China and other Asia countries, which have tremendous demands for raw material to perfect their domestic infrastructure and living equipment. The cooperation with these countries could be of great help to generate more revenues, after all, the main problem is the decline of sales. Meanwhile, decreasing huge receivables can activate Armatury Group's liquidity. Only by increasing the sales and cutting down the heavy interests and taxes burden can Armatury Group embrace a brighter future.

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# List of Abbreviations

| | |
|---|---|
| A | Assets |
| ACP | Average collection period |
| E | Equity |
| EAT | Earnings after taxes |
| EBIT | Earnings before interests and taxes |
| EBT | Earnings before taxes |
| GPM | Gross profit margin |
| NPM | Net profit margin |
| OPM | Operating profit margin |
| ROA | Return on assets |
| ROE | Return on equity |
| TAT | Total assets turnover |
| TCZK | thousands of Czech koruna |

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Student´s name and surname

# List of Annexes

Annex 1: The balance sheet of Armatury Group (in Thousands of CZK)

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| **Total assets** | **1,672,238** | **2,047,379** | **2,186,896** | **2,163,031** | **1,939,277** |
| **Fixed assets** | **325,360** | **463,691** | **643,210** | **717,292** | **790,051** |
| Intangible fixed assets | 2,076 | 4,553 | 3,166 | 1,532 | 4,832 |
| 1. Research and development | 0 | 0 | 0 | 0 | 4,832 |
| 2. Software | 2,076 | 4,490 | 3,166 | 1,532 | 0 |
| Tangible fixed assets | 297,477 | 419,946 | 585,030 | 608,524 | 718,901 |
| 1. Land | 7,914 | 8,716 | 11,396 | 10,453 | 527,421 |
| 2. Buildings | 227,574 | 281,709 | 346,323 | 388,220 | 10,982 |
| 3. Individual movables and sets of movables | 56,957 | 74,647 | 137,092 | 111,745 | 516,439 |
| 4. Planting complexes of perennial crops and stands | 0 | 0 | 0 | 0 | 191,336 |
| 6. Other tangible fixed assets | 92 | 92 | 92 | 92 | 92 |
| 7. Tangible fixed assets in progress | 4,940 | 18,939 | 89,638 | 85,027 | 52 |
| 8. Advance payments for tangible fixed assets | 0 | 35,843 | 489 | 12,987 | 0 |
| 9. Valuation difference of acquired assets | 0 | 0 | 0 | 0 | 52 |
| Financial investments | 25,807 | 39,192 | 55,014 | 107,236 | 66,318 |
| **Current assets** | **1,336,768** | **1,575,513** | **1,531,288** | **1,441,078** | **1,139,402** |
| Inventory | 712,229 | 648,995 | 756,376 | 819,743 | 385,043 |
| 1. Materials | 111,091 | 189,675 | 265,058 | 365,612 | 77,369 |
| 2. Work-in-progress and semi-finished products | 227,000 | 186,057 | 170,823 | 204,029 | 72,242 |
| 3. Products | 82,947 | 69,189 | 51,536 | 51,975 | 211,907 |
| 4. Merchandise | 255,714 | 188,751 | 205,537 | 173,914 | 23,525 |

| | | | | | |
|---|---|---|---|---|---|
| 5. Advance payments for inventory | 35,477 | 15,323 | 63,422 | 24,213 | 666,655 |
| Long-term receivables | 104 | 2,233 | 2,323 | 4,614 | 88,495 |
| 1. Assets from trading relations | 87 | 2,198 | 2,288 | 3,579 | 73,885 |
| 2. Supplied long-term deposits | 17 | 35 | 35 | 35 | 35 |
| 3. Other receivables | 0 | 0 | 0 | 1,000 | 1,150 |
| 4. Deferred tax receivables | 0 | 0 | 0 | 0 | 13,425 |
| Short-term receivables | 622,077 | 923,703 | 771,232 | 602,297 | 535,981 |
| 1. Assets from trading relations | 577,172 | 881,707 | 630,951 | 521,868 | 28,072 |
| 2. Assets - controlling party | 18,471 | 25,178 | 61,172 | 57,762 | 0 |
| 3. Assets - substantial influence | 0 | 0 | 0 | 0 | 14,107 |
| 4. State - tax receivables | 25,227 | 14,776 | 37,467 | 17,192 | 9,895 |
| 5. Granted short-time deposits | 929 | 1,476 | 21,670 | 3,899 | 1,228 |
| 6. Estimated accrued receivables | 0 | 0 | 5,553 | 1,358 | 1,753 |
| 7. Other receivables | 278 | 566 | 14,419 | 218 | 1,231 |
| Cash and cash equivalents | 2,358 | 582 | 1,357 | 14,424 | 87,704 |
| **Accruals** | **10,110** | **8,175** | **12,398** | **4,661** | **9,824** |
| 1. Deferred expenses | 9,798 | 7,146 | 11,758 | 4,661 | 9,711 |
| 2. Accrued revenues | 312 | 1,029 | 640 | 0 | 113 |
| **TOTAL LIABILITIES** | **1,672,238** | **2,047,379** | **2,186,896** | **2,163,031** | **1,939,277** |
| **Equity** | **970,841** | **1,014,836** | **1,056,629** | **1,094,227** | **735,815** |
| Registered capital | 501,200 | 501,200 | 501,200 | 501,200 | 501,200 |
| Capital funds | 24,342 | 30,463 | 36,657 | 68,355 | 38,127 |
| Reserve funds, indivisible fund and other funds from profit | 243,067 | 243,067 | 243,067 | 243,067 | 243,067 |
| Not-own capital | 695,396 | 1,017,485 | 1,124,322 | 1,065,471 | 1,203,461 |
| Reserves | 10,115 | 0 | 0 | 743 | 5,018 |
| 1. Reserves under special legislation | 10,115 | 0 | 0 | 0 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 2. Income tax reserve | 0 | 0 | 0 | 743 | 0 |
| 3. Other reserves | 0 | 0 | 0 | 0 | 5,018 |
| **Long-term liabilities** | **12,974** | **16,023** | **16,462** | **16,964** | **178,416** |
| 1. Other payables | 0 | 0 | 0 | 42 | 259 |
| 2. Due deferred tax | 12,974 | 16,023 | 16,462 | 16,922 | 178,157 |
| **Short-term liabilities** | **666,801** | **972,802** | **964,546** | **887,974** | **1,020,027** |
| 1. Accounts payable | 407,110 | 369,226 | 433,969 | 244,297 | 292,778 |
| 2. controlling party | 22 | 570 | 769 | 173,927 | 25,276 |
| 3.Employees payable | 11,810 | 11,942 | 12,405 | 12,093 | 12,610 |
| 4. Payables to social security and health insurance | 6,706 | 6,764 | 7,044 | 6,699 | 7,090 |
| 5. State - due taxes and subsidies | 1668 | 1,653 | 2,625 | 1,882 | 1,573 |
| 6. Short-term advance payments received | 25,799 | 24,405 | 17,832 | 20,141 | 42,198 |
| 7. Estimated accrued payables | 1,317 | 8,919 | 2,819 | 18,974 | 5,479 |
| **Accruals** | **6,001** | **15,058** | **5,945** | **3,333** | **1** |

Annex 2: The income statement of Armatury Group (in Thousands of CZK)

| Components | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| **Revenues** | **1,044,139** | **853,104** | **856,114** | **598,009** | **324,245** |
| **Cost of sales** | **853,580** | **661,377** | **700,884** | **479,363** | **267,157** |
| **Gross profit** | **190,559** | **191,727** | **155,230** | **118,646** | **57,088** |
| Production | 1,547,078 | 1,305,316 | 1,247,942 | 1,284,510 | 1,556,445 |
| Production consumption | 1,450,545 | 1,175,096 | 1,075,172 | 1,077,082 | 1,081,274 |
| Value added | 287,092 | 321,947 | 328,000 | 326,074 | 639,670 |
| Personal expenses | 237,369 | 251,415 | 254,862 | 256,580 | 282,009 |
| Depreciation of long-term tangible and intangible property | 31,988 | 28,707 | 47,628 | 53,028 | 84,731 |
| Revenues from sales of fixed assets and materials | 362,335 | 256,340 | 222,124 | 213,415 | 274,491 |
| Net book value of fixed assets and materials sold | 345,665 | 234,187 | 187,375 | 196,268 | 1,713,528 |
| Variation in reserves and rectifying items in operation field and complex expenses for subsequent periods | -29,451 | -11,578 | 6,021 | -2,326 | 190,518 |
| Other operating revenues | 24,795 | 17,464 | 99,399 | 135,665 | 6,200 |
| Other operating expenses | 41,088 | 26,771 | 96,668 | 144,427 | 21,891 |
| **Total operating expenses** | **147,574** | **143,616** | **108,696** | **102,285** | **442,616** |
| **EBIT** | **42,985** | **48,111** | **46,534** | **16,361** | **-385,528** |
| Revenues from sales of securities and ownership interests | 0 | 0 | 0 | 1,000 | 0 |
| Securities and ownership interests sold | 0 | 0 | 0 | 923 | 0 |
| Revenues from financial investments | 1,131 | 1,495 | 1,224 | 974 | 1,224 |

| | | | | | |
|---|---|---|---|---|---|
| Interest revenues | 76 | 87 | 138 | 41 | 86 |
| **Interest expenses (paid)** | **6,626** | **5,889** | **9,058** | **9,258** | **11,583** |
| Other financial revenues | 88,016 | 69,677 | 80,619 | 55,694 | 27,280 |
| Other financial expenses | 93,110 | 87,304 | 90,955 | 65,989 | 34,743 |
| **EBT** | **36,359** | **42,222** | **37,476** | **7,103** | **-397,111** |
| **Income taxes** | **353** | **4,347** | **1,877** | **1,203** | **-31,981** |
| 1. due | 53 | 1,298 | 1,438 | 743 | -594 |
| 2. deferred | 300 | 3,049 | 439 | 460 | -31,387 |
| **Net income (EAT)** | **36,006** | **37,875** | **35,599** | **5,900** | **-365,130** |